Biological Report 90(7)
October 1990

Opportunities to Protect Instream Flows and Wetland Uses of Water in Florida

Fish and Wildlife Service
U.S. Department of the Interior

Biological Report

This publication series of the Fish and Wildlife Service comprises reports on the results of research, developments in technology, and ecological surveys and inventories of effects of land-use changes on fishery and wildlife resources. They may include proceedings of workshops, technical conferences, or symposia; and interpretive bibliographies.

Copies of this publication may be obtained from the Publications Unit, U.S. Fish and Wildlife Service, 1849 C Street, N.W., Mail Stop 130—ARLSQ, Washington, DC 20240, or may be purchased from the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161.

ISSN 0895-1926

Biological Report 90(7)
October 1990

Opportunities to Protect Instream Flows and Wetland Uses of Water in Florida

By

Nina Burkardt

U.S. Department of the Interior
Fish and Wildlife Service
Washington, D.C. 20240

Preface

The National Ecology Research Center and its predecessor, the Western Energy and Land Use Team, have published a number of similar documents. The research presented in these reports provides an overview and preliminary evaluation that will help Federal, State, or local planners and managers meet their increasingly complex responsibilities. Information is now available for 32 Western, Midwestern, and Southern States.

The purpose of this series is to point out the opportunities in instream flow management that currently exist under State law, so that planners and managers can anticipate development, plan appropriate programs, and evaluate the costs and benefits of certain courses of action. In addition, the reports are brief histories of the level of success of various State programs. The use of this information can result in a significant cost saving for planners and managers.

In some reports, opportunities in each State are presented in a single document, but in several publications, reports on two or more States from the same geographic region are combined. The combined reports aid comparison of specific programs. This is particularly useful because of the wide variety of instream flow protection programs or possibilities.

Each report has an Introduction that discusses its purpose, uses, and limitations, and a separate information table that summarizes the contents for each State.

Contents

Opportunities to Protect Instream Flows and Wetland Uses of Water in Florida

by

Nina Burkardt

TGS Technology, Inc.
Fish and Wildlife Service Operations
National Ecology Research Center
4512 McMurray Avenue
Fort Collins, Colorado 80525

Introduction to the Series

Objectives

This document combines the efforts of several individuals, agencies, and organizations toward a common objective: the identification, description, and preliminary evaluation of promising opportunities for protecting instream uses of water under existing laws in Florida.

This report is intended for the use of State and Federal planning and management personnel who need an overview of potential opportunities for preserving instream flows. It is not intended to replace or challenge the advice of agency counsel, nor is it written to provide legal advice. Instead, it is designed as a guide for the person trying to find his way among sometimes bewildering State statutes and administrative practices. This report is not, and should not be taken as, official policy or prediction of future actions by any agency. It is simply a summary of some potential opportunities for protecting instream uses.

Toward these objectives, the U.S. Fish and Wildlife Service, through its Water Resource Analysis Project, contracted in 1977 with R. Dewsnup and D. Jensen to identify available strategies under State and Federal laws, interstate compacts, and water quality laws. A second firm, Enviro Control, Inc., was contracted to evaluate the most promising strategies. The resulting documents reported instream flow strategies for 11 States. These reports have been revised, updated, and combined in a number of new monographs, and the Service has added more States to this series over the years. The discussion of instream flow programs and opportunities for each State is written so that each report can be read independently, with minimal cross-referencing from one State report to another. The opportunities for Florida are summarized in the Table.

Table. *Summary of opportunities to protect instream flows and wetland uses of water in Florida.*

Title	General description	Applicable situations
Riparian Rights (see page 7)	A riparian landowner may make reasonable use of water flowing through his property	A riparian landowner may demand that water be delivered in amounts necessary to protect reasonable and beneficial riparian uses
Florida Environmental Protection Act of 1971 (see page 8)	Citizens are given standing to sue the State for nonenforcement of environmental regulations	The Environmental Protection Act can be used to compel State agencies to strictly enforce their authority
Florida Water Resources Act of 1972 (see page 10)	The act is a comprehensive framework for water use planning and regulation	State agencies responsible for making water management decisions are guided by the act. Rulemaking authority is also delegated by the Water Resources Act
Growth management (see page 12)	Florida's State Comprehensive Plan requires State agencies and local governments to plan for growth by demonstrating the ability of natural systems and infrastructure to accommodate the growth	Local governments must plan for water of acceptable quantities and quality as they consider development plans
Areas of Critical State Concern (ACSC; see page 13)	Certain areas are designated as environmentally endangered. Restrictions can be placed on development	Areas that are critical for aquifer recharge may be protected by ACSC designation. Other sensitive water resources can also be protected
Development of Regional Impact Review (DRI; see page 15)	Developments that will affect regional resources are reviewed by certain State agencies	A development of regional impact is one which ". . .because of its character, magnitude, or location, would have a substantial effect upon the health, safety, or welfare of citizens of more than one country" [F.S. 380.06(1)]
Save Our Rivers Program (see page 16)	Water management districts can acquire lands to protect critical water resources	When protection of wetlands or instream flows can best be accomplished by outright acquisition of the surrounding land, water management districts attempt to gain title to these lands
Land Acquisition for Conservation or Recreation (see page 17)	Lands are set aside because of their historic, cultural, or natural resources	Environmentally endangered lands are acquired so that they are protected from development. Protection of water resources and fish and wildlife habitat is a stated purpose of the acquisition program

Table. *Continued.*

Title	General description	Applicable situations
Recreational Trails Systems (see page 19)	Nature trails are set aside for public use and enjoyment. Canoe trails are included in the system	Public awareness of instream values is enhanced when recreational trails are used. In addition, there are restrictions placed on activities in canoe trails that would impair use
Water Resources Restoration and Preservation Act of 1977 (see page 20)	The Department of Environmental Regulation (DER) regulates dredge and fill activities in all waters of the State (Florida Statutes, Chapter 403.0615)	The DER assesses the effects of proposed projects on water quality. If such projects threaten water quality in areas designated for recreation or for fish and wildlife, permits may be denied
Warren S. Hendersen Wetlands Protection Act of 1984 (see page 21)	The DER evaluates permits that include alterations in wetland areas	The DER may deny permits that would result in loss of wetland areas. Alternatively, mitigation may be required as a condition of allowing development of wetland acreage
Permitting of Consumptive Uses of Water (see page 23)	Permitting of wells is authorized by the Water Resources Act of 1972 (Florida Statutes, Chapter 373)	Groundwater supplies can be protected by regulating the number and spacing of wells
Water Quality and Pollution Control (see page 23)	Discharges into Florida's waters are regulated so that water quality standards are maintained	Surface waters are classified as to type of use. Outstanding Florida Waters are given special protection
Surface Water Improvement and Management Act (SWIM; see page 25)	The SWIM Act (Florida Statutes, 373.451 et seq.) directs water management districts to develop plans to clean up polluted water bodies	Each water management district is charged with development of SWIM plans for high priority waters. State funding is available for drafting and implementing these plans
Water Recycling and Reuse (see page 26)	Municipalities are encouraged to recycle water to conserve surface and groundwater supplies. Reclaimed water is used for irrigation and other nonpotable uses	Areas experiencing actual or threatened water shortages due to aquifer drawdown may find that recycling alleviates their problems. The burden on wastewater treatment plants can be lessened if some water is treated to somewhat lower standards than the potable water supply
Florida Endangered and Threatened Species Act of 1977 (see page 27)	Permitting agencies must consult with the Game and Freshwater Fish Commission or the Department of Natural Resources when considering permits in areas known to contain habitat for endangered or threatened species	Dredge and fill permits must go through review. The reviewing agency recommends modifications that will protect habitat

Table. *Continued.*

Title	General description	Applicable situations
Land Acquisition to Protect Habitat (see page 28)	The Conservation and Recreation Lands Program allows for acquisition of lands that contain important habitat	Land may be recommended for acquisition on the basis of its value as critical habitat
Florida Coastal Zone Management Act of 1978 (see page 29)	The Florida Department of Environmental Regulation coordinates a federally approved plan to coordinate activities that affect coastal resources	Numerous State agencies are involved in coastal zone management. The State's Coastal Zone Management Act guides these various agencies as they implement their programs and regulations

Background Considerations

Both State and Federal agencies have important roles to play in water management, particularly in instream flow preservation. This report is written from the perspective that the States have primary authority over water management, unless they are limited or superseded by an act of Congress or duly authorized Federal program or project.

The summaries offered here are not intended to suggest that Federal instream flow decisions will or should replace current State water administration or management systems. It is important for Federal employees to recognize the importance of State water management policy and statutes. A close working relation between State and Federal agencies is often the most practical way of getting things accomplished. Resources are always limited and, in some cases, gathering and developing information may be beyond the financial power of the agency most concerned. As a result, agencies and individuals should learn to cooperate with similarly oriented private, State, and Federal organizations to ensure success.

The reader who wishes to understand opportunities for protection of instream flows and wetland uses of water should begin by looking at the physical and legal circumstances of the entire stream or water body. A planner or manager should consider all types of land and water interests involved. The stream should be examined both upstream and downstream of the reach of interest. Downstream interests should be considered because they often have legal possession and control of lands and waters and their present uses, such as agriculture, planned development, wilderness, or industry.

Contracts or leases may be held by several organizations or individuals. In addition, government agencies may have authority over the land and water. Potential governing agencies are many and diverse, ranging from the Federal Government to special districts and municipal bodies. Therefore, a knowledge of the various instream flow and wetlands opportunities is important.

Instream flow problems may include appropriation conflicts, lack of flow, or administrative difficulties. When possible, the planner or manager should seek the least expensive, least disruptive, and simplest solution to the problem. In some cases, this may mean having a conversation with a landowner or local administrator, sending a letter to the owner or lessee of the land and water, or simply arranging a meeting between water users who could stagger their withdrawals or in some other way provide for an instream flow. However, these are informal methods and offer no legal protection, so their usefulness is limited to those situations in which voluntary arrangements are acceptable.

A risky, complex, and often expensive approach to protecting streams is the use of lawsuits. In some cases, litigation may be an unavoidable part of protecting a right.

In using this report, the reader should be aware of its purpose and limitations. First, only a few of many possible opportunities are described. The user should exercise initiative, judgment, and creativity in dealing with any specific situation. Second, this report should be used only as a starting point. In any situation related to the acquisition of water rights, legal advice should be sought. This

report should in no way be construed as a substitute for opinion of a private attorney, attorney general, or agency counsel. Third, this report is neither a policy nor a decision document; it is simply a collection of opportunities that seem to have utility in a variety of situations.

The purpose of this report is to encourage cooperative and innovative thinking by all persons interested in protecting instream flows for fish and wildlife, and watershed management at Federal, State, or local levels of government, as well as private individuals and wildlife organizations. Many talented people want to protect instream flows; their cooperation in a variety of approaches will be necessary to further this goal.

Opportunities to Protect Instream Flows and Wetland Uses of Water in Florida

Introduction

It is impossible to think of Florida without envisioning water. Because of its 1,609 km (1,000 miles) of coastline, many inland water bodies, and extensive wetlands, the State possesses an abundance of water resources. This has not led to a lack of water management. In fact, a complex water management system has evolved in the State. This system is a reflection of the multitude of factors being considered in planning for Florida's water future.

Early Florida water management efforts largely addressed flood control, the aiding of navigation, and development of water supplies for industry, agriculture, and domestic uses. It was not until 1957 that legislation was created to manage surface water and groundwater, establish a permit system for water use in problem areas, and authorize the formation of water management districts. As the population of Florida continues to grow, providing an adequate quantity of water of acceptable quality for both consumptive and nonconsumptive uses is an ongoing challenge. Most areas of Florida have enough water, and the lessons to be learned are much different from those in States that lack an abundant water supply. Planning for growth while maintaining the biological and ecological integrity of the State's water and land resources is a complex undertaking. This monograph examines the legal and administrative processes involved in the protection of instream flows and wetland uses of water in Florida.

State Agencies with Jurisdiction over Surface Water and Groundwater

Department of Environmental Regulation

The Department of Environmental Regulation (DER) is designated by the Water Resources Act of 1972 as the lead agency in water management activities.

> It is therefore the intent of the legislature to vest in the Department of Environmental Regulation or its successor agency the power and responsibility to accomplish the conservation, protection, management, and control of the waters of the state with sufficient flexibility and discretion to accomplish these ends through delegation of appropriate powers to the various water management districts [Florida Statutes, 373.016(33)].[1]

To a large extent, the Department has delegated authority to five water management districts, assuming that local and regional control over water issues is a more effective strategy than that of centralized management. The boundaries of the six districts substantially coincide with those of five water management districts; a description of these districts follows. Some concern developed, however, over the lack of consistency that may be fostered by such decentralization, and in 1983 the DER issued a State water policy to provide the districts with guidance [Fla. Admin. Code Ann. r 17–40 (1986)]. Another means of oversight by the Department exists in its authority to review district plans to ensure conformity with the State Water Plan. This plan details the long- and short-term objectives and policies of water management in Florida. Although some conflict is inevitable in a system where authority is divided, the relation between the DER and the districts is generally cooperative.

The Department also oversees, and issues permits for, dredge and fill operations. It is the main water quality agency in the State, and it sets standards for groundwater protection, wetland protection, sewage and industrial discharges, stormwater management, and so forth.

In late 1986, the 15-member Environmental Efficiency Study Commission (EESC) was appointed and given the task of assessing the effectiveness of the State's environmental management scheme. A major component of the process was public input, and several public meetings were

[1] Florida Statutes will be cited throughout this report as F.S., followed by the appropriate chapter and section.

held between December 1986 and February 1987 to meet this objective. Additionally, the Water Management Districts, Regional Planning Councils (RPC's), and State agencies provided reports detailing their perspectives on the management scheme. The product of this effort was a report to the legislature in April 1987, describing areas of overlapping authority, including recommendations for increased administrative efficiency. The problems unearthed by the report seemed more complex than anticipated, and the legislature authorized the continuance of the commission. The final report, issued on 1 February 1988, described a fundamentally healthy system in need of structural modifications. Essentially, the committee recommended that agency responsibilities be redistributed to eliminate overlap. The DER is envisioned as a coordinating and research-oriented body that provides policy guidance to the water management districts. Primary matters to be addressed, in the commission's opinion, are funding and enforcement of permit activities. Higher levels of financial support from the State may help to attract and retain talented employees and allow the various State agencies to perform their mandated duties. Enforcement activities may benefit from this, and the commission also recommended that more explicit policies be established concerning enforcement.

The recommendations of the commission were the basis for legislation proposed in the 1988 legislative session. Even though it is foreseeable that the commission's findings will lead to some restructuring of the current administrative framework, speculation on the details of this process is premature.

Department of Natural Resources

Many State-owned lands, including submerged sovereignty lands administered through the Board of Trustees of the Internal Improvement Trust Fund (the governor and the cabinet), are managed by the Department of Natural Resources (DNR). Other State-owned lands under the jurisdiction of the DNR are aquatic preserves, State parks and wilderness areas, recreation and conservation areas, and environmentally endangered lands. Beach nourishment and erosion control, coastal construction control lines, problems of beach access, and management of marine fisheries are also addressed by the DNR. The DNR is composed of seven divisions: Administration, Marine Resources, Resource Management, Law Enforcement, Beaches and Shores, Recreation and Parks, and State Lands.

Water Management Districts

Five water management districts were created by the Water Resources Act of 1972 (F.S. 373.013–.616): (1) the Northwest Florida Water Management District, (2) the Suwannee River Water Management District, (3) the St. Johns Water Management District, (4) the Southwest Florida Water Management District, and (5) the South Florida Water Management District. Before 1972, two districts existed: the Central and South Florida Flood Control District, formed in 1949, and the Southwest Florida Water Management District, formed in 1961. Both were preserved by the 1972 Act, although their boundaries were altered. The philosophy behind the formation of the districts and the concentration of decisionmaking at the district level is that each area faces unique problems or, as expressed by 373.016(3), "the legislature realizes that the water resource problems of the State vary from region to region, both in magnitude and complexity." For example, south and central Florida, both areas of rapid population growth, face different water management problems than do areas of slower growth. As previously mentioned, much of the authority of a district is conferred at the discretion of the DER, and there are variations among the districts as to how much initiative they take in setting policy and performing research. This initiative is related to the financial resources of the districts and the complexity of the problems facing each district.

Each district is directed by a governing board consisting of nine members who live within the district. The exception is the board of the Southwest Florida Water Management District, which has 11 members. Four-year appointments are granted to each member. A governing board may

- contract with public agencies, private corporations, or other persons; sue and be sued; appoint and remove agents and employees, including specialists and consultants;
- issue orders to implement or enforce any of the provisions of the act, or regulations thereunder; and
- make surveys and investigations of the water supply and resources of the district and cooperate with other governmental agencies in similar activities [F.S. 373.083(1)–(3)].

At the discretion of the DER, a governing board may also

- administer and enforce all provisions of the act, including the permit system;
- cooperate with appropriate Federal agencies in flood control, reclamation, and conservation projects, when such projects are necessary for the protection of the inhabitants or land in the district from the effects of water surpluses or deficiencies;
- plan, construct, operate, and maintain works of the district;
- determine, establish, and control the level of waters to be maintained in all bodies of water within the district; to maintain these levels by means of dams, locks, floodgates, dikes, and other structures; to regulate discharges into and withdrawals from water controlled by the district;
- expend funds, not to exceed one quarter of 1% of the money collected by taxation in the district, for promotion, advertising, and program improvement;
- exercise such additional authority as may be necessary to perform the duties implied by the act; and
- prepare, in cooperation with the DER, that part of the State water use plan applicable to the district [F.S. 373.103(1)–(7)].

In addition to these administrative authorizations, a district is authorized to do any act necessary to replenish the groundwater [F.S. 373.106(2)]; acquire property when deemed necessary for the conservation and protection of water resources (F.S. 373.139); regulate water use by apportioning, limiting, or rotating uses of water, or by preventing uses judged to no longer be reasonable or beneficial [F.S. 373.171(b)]; declare water shortages and issue emergency orders (F.S. 373.175); and regulate wells and require well contractors to obtain licenses (F.S. 373.323). Some districts have been granted the authority to regulate dredging and filling and to design and implement stormwater management programs. Activities of the districts are funded through the General Revenue Fund, permit application fees, ad valorem taxes, and issuance of bonds.

Department of Community Affairs

The Department of Community Affairs (DCA) is the primary land use planning agency in the State. Florida's 1985 Growth Management Act and the State Comprehensive Plan are overseen by the DCA. This act requires the formulation of land use plans by local governments. The DCA reviews each plan for consistency with the State Comprehensive Plan.

Game and Fresh Water Fish Commission

The Game and Fresh Water Fish Commission consists of five members appointed by the Governor for staggered 5-year terms. Under the Florida Endangered and Threatened Species Act of 1977, the commission is responsible for research and management of freshwater and upland endangered and threatened species. It is charged with protecting wild animals and freshwater aquatic life, promoting hunting and fishing, and law enforcement and management of certain State hunting and wildlife management areas.

Regional and Municipal Agencies

The main authority held by local governments that relates to water management is in the areas of zoning and land use regulation. In accordance with the Growth Management Act of 1985, local governments are required to submit to the DCA detailed land use plans. These plans must include provisions for infrastructure development and must be compatible with the land use plans of surrounding cities.

Several entities operate on the regional level. Water Management Districts are one example; the eleven Regional Planning Councils (RPC's) are another. These councils develop and review regional plans with the intention of promoting broad-based cooperative and long-range land and water management strategies.

Riparian Rights

Opportunity. The riparian doctrine provides that a landowner is entitled to the reasonable use of water flowing through his property, provided that he does not impair the rights of other riparian owners to their reasonable use of the water. This requirement may serve to keep water in a stream, thereby protecting habitat or providing for recreation and other instream uses.

Background. Before the adoption of the Water Resources Act of 1972 (F.S. Chapter 373), Florida adhered to the riparian doctrine. A landowner

whose land extended to the ordinary high watermark of a navigable body of water was free to make use of the water that flowed through his property. These uses were to be "reasonable," and the test was whether one's use of the water harmed anothers. If an upstream user diverted the entire flow of a stream, depriving his downstream neighbor of water, this would probably be found to exceed the reasonable limits. In such a case, the injured party could bring a civil case against the overzealous user in a court of law; the court would then decide what adjustments must be made so that all reasonable and beneficial riparian uses were accommodated. Alternatively, riparian owners could negotiate agreements out of court.

In 1972, the Florida Legislature passed the Water Resources Act (F.S. Chapter 373) in response to increasing demands for water. The State had outgrown the riparian doctrine and needed a water management system suited to a rapidly growing State.

With the passage of the 1972 Water Resources Act, most riparian rights were abolished (not all districts initially abandoned the riparian doctrine), and a permit system for water withdrawals was established. Applicants must show that a proposed use is "reasonable–beneficial," that it is consistent with the public interest, and that it will not interfere with any existing legal use of water [F.S. 373.223(1)(a)–(c)]. Those exercising riparian rights at the time of the passage of the act were required to apply for permits if they wished to continue to make use of the water. The exception to this is individual domestic users, who continue to hold riparian rights and, therefore, the authority to protect those rights.

Example. In *Game and Fresh Water Fish Commission* v. *Lake Islands* [407 So. 2d 189 (Fla. 1981)] the Game and Fresh Water Fish Commission (commission) used its statutory authority to protect freshwater aquatic life by prohibiting the use of motorized craft, including airboats, on Lake Iamonia during duck hunting season. Lake Islands, Ltd., a limited partnership that owned islands in this navigable lake, requested an airboat permit from the commission during the 1978 duck hunting season. Prospective buyers could then be ferried to the islands. Lake Islands maintained that airboat transport was the only possible way of reaching many of the islands in the shallow lake.

The commission denied the permit, and Lake Islands sought and gained a temporary injunction. The court required the commission to issue permits to island owners for the reasonable use of airboats and motorboats because part of the riparian right of these island owners is access to the islands. Prohibiting reasonable methods of transportation denies the landowners their rights of access.

In an earlier case [*Webb* v. *Giddens*, 82 So. 2d 743 (Fla. 1955)], Giddens owned land on a small arm of Lake Jackson, where he rented boats to fishermen who then piloted the boats under a State-owned bridge into the main body of the lake in order to fish. The State "improved" the area by removing the bridge and replacing it with fill, thereby preventing access to the lake from Giddens's boat rental area. When challenged, the State replied that a riparian right ends when one reaches the water. However, the court disagreed with this interpretation and stated that a riparian right implies access for fishing, boating, and other activities. Therefore, the State cannot act to restrict access for riparian owners.

Evaluation. Although use of the riparian doctrine has been narrowed by the passage of the Water Resources Act of 1972, private riparian users remain protected. Nonconsumptive riparian rights were not modified by the 1972 Act; consumptive riparian rights were, at least in districts that implemented the permit system. The courts seem to support these rights as long as the use of the water is reasonable and beneficial. The Webb and Lake Island cases focus on the right of access to a riparian holding. Even though this is different from the protection of instream flows, situations may exist in which restricting access in a navigation sense may also have a negative effect on streamflows or lake levels. For example, if the level of a water body drops so that a riparian landowner cannot use the water for fishing, his riparian rights may be violated, and the person causing the drop may be required to cease the damaging action.

Private Rights of Action

Private citizens and public interest groups have the authority to compel the State to protect instream values and wetland areas by several means in Florida. One of these is the riparian doctrine. Other strategies include nuisance actions and citizens' suits under the authority of the Florida Environmental Protection Act (F.S. 403.412). In addition, many permit-allocating actions of the State require citizen input. In this way, diverse views regarding the best use of resources are solicited and considered.

Florida Environmental Protection Act of 1971

Opportunity. Statutes that give citizens standing to sue the State for nonenforcement of environmental regulations can provide protection for surface waters and associated habitat.

Background. The Environmental Protection Act of 1971 (F.S. 403.412) gives the Department of Legal Affairs, any political subdivision or municipality of the State, or any citizen of the State the ability to seek injunctive relief against a governmental entity that is not enforcing applicable environmental laws, rules, or regulations [F.S. 403.412(2)(a)(1)]. One can also seek such relief against a party who violates environmental regulations. Before initiating an action, the complaining party must file a formal complaint with the appropriate agency; the agency then has 30 days within which to take corrective action. The exception to this is an instance in which the violation is causing irreparable harm; a temporary restraining order may then be issued. If an alleged violation is being incurred pursuant to valid permits or certifications, no action may be filed [F.S. 403.412(2)(e)].

Example. A basic issue in determining the applicability of Florida's Environmental Protection Act is standing—that is, who has the right to bring suit under the act?

In *Save Our Bay, Inc.* v. *Hillsborough County Pollution Control Commission* [Fla. App., 285 So. 2d 447 (1973)], Save Our Bay, a nonprofit corporation, attempted to bring suit against the pollution control commission. The corporation charged that certain utilities under the jurisdiction of Hillsborough County Pollution Control Commission were in violation of discharge standards and that the pollution control commission had failed to force their compliance. Because members of Save Our Bay used the affected waters for fishing, swimming, and other recreational pursuits, the group claimed standing under the Environmental Protection Act.

The circuit court dismissed the action on the basis of lack of standing. The case was then brought before the district court of appeals, and the judgment on standing was reversed. While the circuit court had ruled against standing because Save Our Bay had not suffered special injury, the district court of appeals stated that special injury was not a requirement for claiming standing under the State's Environmental Protection Act. If an individual citizen, or a group of citizens, shows that the injury suffered by the protested action is comparable to the injury sustained by the general public, standing can be asserted.

In *Florida Wildlife Federation* v. *State Department of Environmental Regulation* [Fla., 390 So. 2d 64 (1980)], the standing issue was brought before the State Supreme Court. The Wildlife Federation sought an injunction against the Department of Environmental Regulation and the South Florida Water Management District because discharges into the Loxahatchee River prevented use of the river by the federation's members. Whereas the circuit court dismissed the case on the standing issue, the Supreme Court reversed the ruling. Stating that private citizens may bring suit without showing special injury, the court reaffirmed the right of private citizens, or groups of citizens, to bring suit against State agencies if those agencies are not enforcing environmental regulations.

The standing issue has been challenged in the State's courts more recently (for example, *Cape Cave Corporation* v. *State Department of Environmental Regulation and Environmental Confederation of Southwest Florida* [498 So. 2d 1309 (Fla. App. 1 Dist. 1986)]). However, the courts have upheld the rights of citizen groups to use the Environmental Protection Act.

A 1985 case illustrated the use of the act to require a State agency to strictly enforce permit regulations (*Booker Creek Preservation* v. *Mobil Chemical*, 481 So. 2d 10 [Fla. App. 1 Dist. 1985]). Mobil proposed the construction of pollution-discharging facilities, in connection with the operation of a phosphate mine. When in operation, about 150 million gallons of water per day would circulate through the mine. Of this, almost 3 million gallons per day would be discharged into the ground. Because the discharge point was underneath three large waste product settling and storage ponds, there was some concern that seepage from the ponds into the underlying fissures and sinkholes would cause severe groundwater pollution. Mobil tested the ground under one pond and determined, on the basis of this testing, that seepage from the ponds would not be a problem.

The final order of the Department of Environmental Regulation granted the discharge permits. Booker Creek Preservation appealed the ruling on grounds that the DER erred in not requiring a groundwater permit for the discharge, and that the subsurface anomalies under the site might cause dispersal of groundwater contamination in violation of the groundwater rule. The court ruled that the DER had not re-

quired adequate testing underneath the ponds, and instructed further evaluation of the effects of the discharges before a permit was granted.

Evaluation. Florida's Environmental Protection Act creates a mechanism by which concerned citizens can exercise some oversight on State activities that affect natural resources. Because the courts have liberally construed standing, both individual citizens and citizen groups have access and can seek relief if State agencies fail to uphold their regulatory responsibilities.

The Environmental Protection Act does not provide for penalties. Should a court find that an agency is failing to carry out its responsibilities, however, the agency may be required to correct its behavior in a manner acceptable to the court.

Water Planning

Florida Water Resources Act of 1972

Opportunity. A comprehensive water management strategy may offer a variety of opportunities to protect instream flows through sections requiring establishment of minimum flows, and by requiring water management entities to consider long-range goals in defining appropriate planning strategies.

Background. The Water Resources Act of 1972 (F.S. 373.013–.616) was developed in response to the problem of managing increasing demands for water for a variety of uses, including municipal, recreational, and agricultural. Before enactment, most water use conflicts were settled in court, and the need for statutory guidelines became increasingly apparent as continued growth caused increased competition for water and drainage of wetlands. The act sought to coordinate the efforts of various water interests by subjecting water management to a controlled and organized system. The act is divided into six parts: (1) State water resource plan, (2) permitting of consumptive uses of water, (3) regulation of wells, (4) management and storage of surface waters, (5) finance and taxation, and (6) miscellaneous provisions. Numerous opportunities exist in the Water Resources Act to protect instream flows.

All waters of the State are subject to regulation. Waters of the State are defined as

> any or all water on or beneath the surface of the ground or in the atmosphere, including natural or artificial watercourses, lakes, ponds, or diffused surface water and water percolating, standing, or flowing beneath the surface of the ground, as well as all coastal waters within the jurisdiction of the state [F.S. 373.019(8)].

The Department of Environmental Regulation (DER) is the lead agency charged with implementation of the Water Resources Act. It is authorized, however, to delegate a great deal of authority to the five water management districts. Currently, most districts issue permits for surface water use and stormwater management, and they also manage isolated wetlands. The DER regulates surface and groundwater quality in conjunction with the districts.

One means of instream flow protection is found in the Declaration of Policy. This declaration states that preservation of natural resources and fish and wildlife is the intent of the legislature [F.S. 373.016(e)]. To promote recreational development, protect public lands, and maintain the navigability of rivers and harbors is another goal [F.S. 373. 016(f)]. This statement demonstrates general support for protecting environmental values, even though there are no regulatory teeth in the declaration.

The second example of an instream flow opportunity is the State Water Use Plan. This plan is the part of the Florida Water Resources Act that delineates various legitimate water uses, including the protection and procreation of fish and wildlife. As the DER formulates the State Water Use Plan, it is to consider the attainment of maximum reasonable-beneficial use [F.S. 373.036(2) (a)], environmental protection [F.S. 373.036(2)(c)], and the quantity of water available for application to reasonable-beneficial use [F.S. 373.036(2)(d)]. A significant section states that

> The department shall give careful consideration to the requirements of public recreation and the protection and procreation of fish and wildlife. The department may prohibit or restrict other future uses on certain designated bodies of water which may be inconsistent with these objectives [F.S. 373.036(7)].

This gives the DER authority to reserve bodies of water in sensitive areas or in prime recreational sites. Restricting "other future uses" may mean restricting withdrawals and development of various kinds or discharges into waters. Such a broad delegation of authority provides a variety of options for instream flow and wetland protection.

The Water Resources Act contains provisions for establishing minimum lake levels and streamflows. These provisions are codified in F.S. 373.042(1) and

(2), where it is specified that the minimum flow or level shall be that at which further withdrawals would be significantly harmful to the water resources or ecology of the area, as determined by the governing board of the Water Management District or by the DER. One feature of this section should be especially noted: The protection of nonconsumptive uses may be considered when determining appropriate levels and flows. Therefore, uses such as recreation and fish and wildlife habitat may be protected. However, these actions leave much to the discretion of the water management districts. Because each district is able to develop its own policies and its own definition of reasonable–beneficial use, the protection of instream flows may not be awarded high priority as the water use plans are developed.

Example. The case of *Pinellas County* v. *Lake Padgett Pines* [App. 333 So.2d 472 (1976)] established guidelines for the application of the Water Resources Act. In this situation, the Southwest Florida Water Management District entered into an agreement with Pinellas County, Pasco County, the Hillsborough River Basin, and the City of St. Petersburg to acquire 3,645 ha (9,000 acres) in Pasco County for flood control, well field development, and a wildlife refuge and recreational area. By early 1976, well field construction was substantially completed, and the district authorized test pumping of 10 million gallons per day. However, Lake Padgett and Pasco County objected to the project at this point, stating that it was properly considered a Development of Regional Impact under Florida Statutes, Chapter 380.06, and that consideration should be given to regional social, economic, and environmental values before the district pumped water to out-of-county users. The trial court agreed with this assessment; however, the appellate court stated that as an existing development, the Water Resources Act, not Chapter 380.06, was properly applied. The court stated that all State laws concerning environmental quality should be construed in harmony with one another, so that the goals of protecting environmental resources and promoting development might be realized. Additionally, the court stated that under the Water Resources Act, agencies should consider the total effect of a water withdrawal project on the environment, and not merely the effect on a single resource.

Another case, *C. E. Middlebrooks* v. *St. Johns River Water Management District*, 259 So. 2d 1167 (Fla. App. 5 dist. 1988), illustrates the ability of a district to place conditions on permit applications. This authority is derived from F.S. 373.219(1), which states:

> . . . the governing board or department may require such permits for consumptive use of water and may impose such reasonable conditions as are necessary to assure that such use is consistent with the overall objectives of the district or department and is not harmful to the water resources of the area. However, no permit shall be required for domestic consumption of water by individual users.

Middlebrooks owned Wekiva Falls Resort, which he had purchased in 1968. A swimming area had been developed by installing standpipes in a low area of a stream on the property where Middlebrooks had observed that more water was flowing out than was coming in. The standpipes diverted this underground flow.

To accommodate recreational development, Middlebrooks applied for a consumptive use permit (CUP) for 31.7 mgd, which was only a portion of the total amount actually flowing from the pipes. The water management district recommended issuance of the permit with certain restrictions, including a clause to allow the district to limit the flow from the pipes during low-flow periods. The district's decision was based on the fact that the stream from which the water was drawn is a tributary of the Wekiva River, and excessive withdrawals could endanger the Wekiva River Aquatic Preserve. Middlebrooks protested on grounds that the pipes were not wells subject to regulation and that, in any case, they were built before the establishment of the aquatic preserve. The final decision of the court was that the standpipes were, in fact, wells, and that the district did have the authority to condition the amount of Middlebrooks' flow. If given the authority only to regulate water use within the boundaries of the preserve, the district would actually be powerless to protect the preserve. By regulating water use outside of the preserve, the district can give the preserve a higher level of protection.

Another authority given to water management districts by the Water Resources Act is that of rulemaking, so that the general provisions of the act are translated into specific management plans. Pursuant to Chapter 373, Florida Statutes, the St. Johns River Water Management District adopted Rule 40C-4 in order to address management and storage of surface waters in the Wekiva River hydrologic basin. As originally written, the rules required that permits be issued for projects

of 4 ha (10 acres) or more within the basin or for those projects that include .2 ha (.5 acre) or more of impervious surface. The rule addressed standards for erosion and sediment control, water quality, limitations on groundwater drawdowns, and the protection of riparian wildlife habitat.

On 13 July 1988, the rule was adopted by the governing board of the water management district. In August of the same year, the Florida Audubon Society, Friends of the Wekiva, and the Central Florida Group of the Sierra Club asked that the governor and the cabinet review the rule. While their belief was that the rule was a good start, they feared that insufficient protection would be given to the basin unless the authority of the water management district to restrict certain activities and developments was expanded. Specifically, the groups objected to the permit thresholds (4 ha [10 acres] for most developments and .2 ha (.5 acre) for impervious surfaces) on the grounds that great harm could be done to the basin by developments smaller than 4 ha (10 acres). Other concerns were the limited extent of the riparian wildlife habitat protection zone designated by the rule and the authorization of outfall structures within the protection zones.

The appropriate extent of the buffer zone had been an issue since criteria for development in the Wekiva River basin were initially proposed. In 1986, the district proposed that such zones be required to protect riparian wetlands from development activities, but the concept met with such opposition that it was dropped. In 1987, buffer zones of 7.6 m (25 feet) were proposed, rather than the 61-m (200-foot) zones discussed in 1986. In contrast, a report prepared by the Center for Wetlands at the University of Florida in October 1987 recommended that variable buffer zones of up to 122 m (400 feet) be established, to be determined on a case-by-case basis. Rule 40C-4, as adopted in July 1988, delineated the riparian habitat protection zone as follows:

1. The wetlands abutting the Wekiva River, Little Wekiva River, Rock Springs Run, Black Water Creek, Sulphur Run, or Seminole Creek;

2. The forested uplands that are within 168 m (550 feet) landward of the waterward extent of the wetlands above; and

3. The uplands that are within 15 m (50 feet) of the landward extent of the wetlands above [40C-41.063(e)].

Although construction in these areas was prohibited by the rule, construction or alteration of limited scope necessary for outfall structures was allowed. The request for review of the rule instigated by the Florida Audubon Society and others was largely prompted by this exclusion and by the limited and invariable extent of the buffer zone.

The appeal was addressed by the Land and Water Adjudicatory Commission (the governor and the cabinet) in December 1988. The commission concluded that the riparian habitat protection zone criteria should be more specifically construed; that rulemaking should be initiated to identify potential harm to the zone; that the provisions allowing outfall structures to be constructed in the water quality and habitat protection zones should be examined and perhaps deleted; and that the thresholds for permitting should be examined and amended as necessary. Hearings for final rule adoption were held in June 1989.

The final rule incorporated three amendments. These amendments further regulate outfall structures, list activities considered harmful to the Riparian Habitat Protection Zone, and require management and storage of surface water review of all proposed systems located in the Riparian Habitat Protection Zone. In addition, the starting point for a Riparian Habitat Protection Zone was clarified.

Evaluation. The Water Resources Act of 1972, as a statement of policy, offers numerous opportunities for the protection of instream flows and wetlands. However, the language of the act is such that the DER and the districts "may" do many things they are not required to do. A combination of the will to protect instream flows and the resources to implement programs is necessary if aggressive action is to be taken.

One accomplishment of the act was a shift in focus from that of altering natural systems to suit man's needs to one of considering the intrinsic value of these systems in their unaltered states. Statutory support exists for the protection of instream flows and wetlands, and State agencies have made use of many opportunities.

Growth Management

Opportunity. Long-term planning documents require State agencies to focus on the availability of resources to support population growth. Part of this involves the availability of adequate water supplies for human needs, as well as for the protection of fish and wildlife and their habitat. Florida's State Comprehensive Plan (F.S. Chapter 187) mandates that State agencies and local governments demonstrate the ability to provide infrastructure for a growing

population, which must be done without causing excessive harm to natural systems.

Background. The idea of a comprehensive planning act was first proposed in Florida in 1972. Although efforts were made to develop a planning document that reflected the goals of the various State agencies, the original plan, submitted to the legislature in 1978, was not accepted.

In 1985, the governor's office developed, and the legislature accepted, a new comprehensive plan. The document covers a wide range of growth management considerations and addresses the need to coordinate activities at various levels of State government. The plan also contains a concurrency requirement, which mandates that proposed growth be accompanied by plans to develop and finance the necessary infrastructure. Each State agency was charged with development of an Agency Functional Plan, and the DER was to prepare an additional State Water Use Plan. Preparation of a Land Development Plan was delegated to the Department of Community Affairs. In addition, each of Florida's local governments was to develop a local comprehensive plan.

The section of the State Comprehensive Plan outlining water resource policy states that

> Florida shall assure the availability of an adequate supply of water for all competing uses deemed reasonable and beneficial and shall maintain the functions of natural systems and the overall present level of surface and groundwater quality. Florida shall improve and restore and quality of waters not presently meeting water quality standards [F.S. 187.201(8)(a)].

The water resources section of the plan calls for establishment of ". . . minimum seasonal flows and levels for surface watercourses with primary consideration given to the protection of natural resources, especially marine, estuarine, and aquatic ecosystems" [F.S. 187.201(8)(b)(6)]. Another section allows for reservation of water in amounts necessary to ". . . support essential nonwithdrawal demands, including navigation, recreation, and the protection of fish and wildlife" [F.S. 187.201(8)(b)(14)].

Example. The State Comprehensive Plan was adopted in 1985, and every local governing body in the State has been directed to develop a plan. All local plans must be found to be in compliance with the State Comprehensive Plan and the Local Government Comprehensive Planning and Land Development Regulation Act (F.S. Chapter 163) by the Department of Community Affairs. When all of the required plans are completed and found in compliance by the DCA, they will represent a coordinated effort at land use management. No examples are yet available of the implementation of the State Comprehensive Plan because it is still in its formative stages.

Evaluation. The State Comprehensive Plan requires participants at all levels of State government to contribute to the design of a central policy document. This is a massive task. Not only must each entity prepare a plan, but the plan must be consistent with others in the State.

At the local level, several problems exist. For one, many local governments lack the resources and expertise to design these complex documents. Assistance is available from the Department of Community Affairs, but there is resistance to its involvement. The questions remain of whether the pieces of the plan will be fused into a meaningful whole and how the infrastructure needs will be financed.

Land Use Regulation

Areas of Critical State Concern

Opportunity. By designating certain areas as environmentally endangered lands, restrictions may be placed on development activities. These restrictions may serve to protect a variety of instream and wetland water uses (F.S. 380.05).

Background. In 1972, the Florida legislature passed several bills relating to land and water management and planning. Many factors contributed to this emphasis on growth management: first, reapportionment was ordered by the Federal District Court in the late 1960's. Before this time, population was concentrated in the southern part of the State, while political authority was strongest in northern Florida. Because reapportionment attempts to distribute political authority evenly by forming districts of approximately equal population, the concerns of the southern parts of the State, with their rapidly increasing populations, were better represented after this change. Second, Florida adopted a new constitution in 1968, which strengthened State government and granted home rule authority to cities and counties. This change paved the way for legislation focused on local and county level planning efforts.

The Environmental Land and Water Management Act of 1972 (F. S. Chapter 380) was one product of this awareness. Section five of this act

concerns areas of critical State concern, which are defined as

> An area containing, or having significant impact upon, environmental or natural resources of Statewide importance, including, but not limited to, State or Federal parks, forests, wildlife refuges, wilderness areas, aquatic preserves, major rivers and estuaries, State environmentally endangered lands, outstanding Florida waters, and aquifer recharge areas, the uncontrolled private and public development of which would cause substantial deterioration of such resources [F.S. 380.05(2)(a)].

Any person or group in Florida can recommend to the State land planning agency, which is the Department of Community Affairs (DCA), that a particular area be so designated. If the DCA determines that the area is of sufficient regional or Statewide importance, principles for guiding development within the area are drawn up and submitted to the governor and the cabinet. If, after public hearings, the area is listed as an Area of Critical State Concern, the locality within which this area is found is given 6 months to draw up development plans. These plans must be compatible with those initially established by the DCA. If the plans are not completed or do not meet with the State's approval, the DCA may develop plans that the local government is then obligated to implement. If 1 year passes during which neither State nor local regulations are passed, the process is terminated and cannot be reintroduced for another 12 months (DeGrove 1984:118).

Example. Several Areas of Critical State Concern (ACSC) have been designated. The first, in 1973, was the Big Cypress Swamp. In this case, the Big Cypress Conservation Act named the swamp an ACSC and allotted funds for the joint Federal–State purchase of land to become the adjoining Big Cypress National Freshwater Reserve, which could be added to the ACSC. In addition to actually protecting the one million acres thus bounded, the freshwater aquifer of south Florida, Everglades National Park, and estuarine fisheries of south Florida could be protected through development restrictions placed on the Big Cypress Swamp. Through the Big Cypress Conservation Act, the State was given the authority of eminent domain, which the ACSC designation alone did not provide.

The reaction to the proposal was severe and negative because the area was so large and the restrictions stringent. Some people felt that this would unduly hamper local growth and development. As a compromise, the area was reduced in size to about 324,000 ha (800,000 acres), 230,850 ha (570,000 acres) of which were in the Federal purchase area of the freshwater reserve. The development restrictions were also loosened. After these changes were made, the governor and the cabinet voted to approve the area as an ACSC. However, controversy remained concerning the appropriateness of this decision.

The Green Swamp, a 324,000-ha (800,000-acre) area west of Orlando, was the next proposed Area of Critical State Concern. It is a vital recharge area for the Floridian aquifer, which provides drinking water for many communities. Green Swamp also detains floodwaters in the Southwest Florida Water Management District and the St. Johns River Water Management District. Although the area was largely rural or agricultural at the time of the proposal, the move to make it an ACSC was prompted by rapid development in the Orlando area and the realization that, if not protected, the Green Swamp area would likely be affected by development in the foreseeable future.

The time from the first steps of designation to completion was about 1 year. An area of 130,815 ha (323,000 acres) in Lake and Polk Counties was formally listed. Throughout the process, local hostility and opposition were strong. As a result, neither Lake County nor Polk County developed regulations within the required 6-month period. Therefore, the Bureau of Land and Water Management developed the regulations. Note that in the early days of these land use regulations, local governments, especially those in rural areas, did not have the resources to develop land use regulations, nor did they have experience; yet they were required to work out complex schemes for managing "critical" areas.

Evaluation. Designation of an area as one of critical State concern is a valuable tool for the protection of instream flows because the State can restrict development in such areas. However, the process has several drawbacks. The most obvious of these is that the State, by designating an ACSC, can overrule local or regional planning efforts. This may be seen as an intrusion by the State into local affairs. In addition, ACSC development plans may be unenforceable due to lack of funding or technical expertise. A cooperative attitude is not enough if the resources are unavailable. Nevertheless, situations exist in which an environmentally sensitive area requires more management than it is being accorded. It may then be appropriate for the State to intervene by requiring consideration of the broader implications of management practices in

these areas. The problem remains in coordinating State and local efforts in land use planning.

Development of Regional Impact Review

Opportunity. The Development of Regional Impact (DRI) program is mandated by the Environmental Land and Water Management Act of 1972 (F.S. Chapter 380). This program requires certain State agencies to comment on development plans of regional significance. Environmental considerations, including the preservation of wetlands and maintenance of instream flows, are important issues when evaluating such proposed projects.

Background. A development of regional impact is defined as

> . . . any development which, because of its character, magnitude, or location, would have a substantial effect upon the health, safety, or welfare of citizens of more than one county [F.S. 380.06(1)].

Large housing developments, jetports, shopping centers, power plants, and mining operations are examples of projects that would likely be subject to DRI review (DeGrove 1984:118).

The DRI review process requires developers to communicate with the Department of Community Affairs (DCA) to determine if a proposed development is a development of regional impact. To aid the DRI review process, the developer may contact the regional planning council with jurisdiction over a proposed development, so that a preapplication conference can be held between the developer and representatives of each agency with authority to issue permits for the development. The purpose of this coordinated review process is to identify the parties involved and their requirements, and to clarify areas of potential conflict [F.S. 380.06(7)].

In the DRI application, information concerning water resources must be provided, including the names of creeks, streams, and rivers flowing to and from the development area; the direction and quantity of flow; the names of ponds, lakes, and retention areas associated with the development area and the quantity of water storage available; the name of the aquifer over which the development lies; the direction of groundwater movement; and the recharge characteristics. Information about the water table also must be provided.

Typically, agencies involved include the Department of Community Affairs, the appropriate regional planning council or councils, local planning agencies, water management districts, and other appropriate State resource management agencies. The local government eventually decides whether or not to issue a development order, which is, essentially, project approval.

In evaluating any proposal, the local government is required to consider a broad range of regional effects as defined by the appropriate regional planning agency. Not only are environmental effects examined, but also considered are economic effects, social effects, and the ability of the existing infrastructure to support the increased demands of a larger population resulting from the development. Another requirement is that the development be consistent with the State and regional policy plans as well as with local land use and zoning restrictions. Local governments need only consider the findings of the regional planning agency; these are not binding and can be overlooked by local governments. However, if the regional planning agency believes that its recommendations have not been adequately considered, a local decision can be appealed to the Land and Water Adjudicatory Commission, which consists of the governor and the cabinet. The commission can require compliance with the regional planning agency's concerns. In addition, after a development order is actually issued by a local government, it can be appealed to the commission by the owner or developer of the land, the regional land planning agency, or the State land planning agency. These decisions are subject to judicial review.

Example. The authority of the State to regulate land use through the DRI process was challenged but upheld in the case of *Graham* v. *Estuary Properties* [Fla. 399 So. 2d 1374 (1981)]. Estuary properties acquired 6,500 acres of land for development, including 2,800 acres of red mangroves, along the edges of Estero, San Carlos, Hurricane, and Hell-Peckish bays on the southwest coast of Florida. For about 220 days each year, tidal waters flush the red mangrove system and move into a 729-ha (1,800-acre) area of black mangroves. Of the entire 1,134-ha (2,800-acre) tract, only 213 ha (526 acres) were classified as nonwetland.

To build a 26,500-unit development, Estuary Properties proposed dredging a 12.1 km (7.5-mile) interceptor waterway through the mangrove system and dredging 27 lakes. The fill from these projects would be used to raise the elevation of the remaining land for construction.

In June 1975, Estuary Properties applied for DRI approval. The Southwest Florida Water Management District recommended that the Board of

County Commissioners deny the application, based on the expected degradation of the water quality of San Carlos and Estero bays, and this was done. The board recommended that the development plans be amended to reduce the density; that destruction of the mangroves be less widespread, because their removal would have adverse effects on the environment; and that the interceptor waterway be reconsidered because this waterway would not truly perform the same drainage functions as did the mangrove system. Estuary Properties claimed that this was a taking of property without compensation because the restrictions placed on development made the land useless for the purposes for which it had been acquired. However, the court ruled that although Estuary Properties had attempted to design a project that would not cause environmental harm, it had failed. Further, an owner of land has no absolute and unlimited right to change the essential character of the land for a purpose for which it is unsuited and which injures the rights of others. If such a use will cause public harm, the State can exercise police authority, which does not require that the State compensate the landowner.

Under Chapter 380 regulations, the State can require a landowner to preserve endangered wetlands, provided that the tract as a whole maintains a viable economic use. In this way, the State's police powers are to be balanced with the rights of property owners.

Evaluation. The DRI process is a potentially valuable program that provides a broad-based examination of large developments. However, several problems in its administration compelled the Environmental Efficiency Study Commission to examine the program, and the commission made several recommendations in its final report of February 1988. According to this report, the DRI process often imposes conflicting requirements on developers. As a result, and because of the expense of compiling the necessary information, the process is avoided by developers whenever possible. Better coordination among the agencies involved in the review may eliminate many of the procedural problems that currently plague the DRI process.

Because of some of the problems encountered, three alternatives to the standard process have been developed. One is the Florida's Quality Development program, which exempts developments meeting certain design criteria. Another is the Downtown DRI, which gives DRI authority to a local government. Thus, proposed developments consistent with local government-approved plans are exempt. The success of the Downtown DRI program led to the third alternative, Areawide DRI process, broadens the authority of local governments in granting DRI approval. The advantage of locally based programs is that they are seen less as intrusions of State government when local governments are given autonomy in making DRI decisions.

Save Our Rivers Program

Opportunity. The Save Our Rivers (SOR) program allows water management districts to acquire lands that protect critical water resources. This aids the preservation of instream values.

Background. The Save Our Rivers program is authorized by the Florida Resource Rivers Act (F.S. 373.59). This was passed by the legislature in 1981. One section of the act created the Water Management Lands Trust Fund, which gives the districts a source of funding for land acquisition through the appropriation of a portion of the documentary stamp tax from real estate transactions in the State. This pool of money is overseen by the DER and is allocated to the districts, funding more than $40 million in annual Save Our Rivers land purchases.

Monies from the Water Management Lands Trust Fund are to be used to acquire lands necessary for water management, supply, and the conservation and protection of water resources. They are to be managed in an "environmentally acceptable" manner, and the natural state of the waters is to be maintained to the extent practicable [F.S. 373.59(3)]. Save Our Rivers lands are also to be made available for public recreation when this is compatible with the purposes of the acquisition [F.S. 373.59(9)].

Typically, a water management district prepares an acquisition plan, anticipating what can reasonably be accomplished in 5 years. Input is provided from the district staff as well as from outsiders, including members of environmental groups that are interested in land acquisition, realtors, and landowners who have parcels that may be of interest to the districts. All of this input is analyzed and prioritized by the districts. It is not uncommon for Save Our Rivers projects to evolve as cooperative efforts between water management districts and private conservation groups. In several cases The Nature Conservancy and the Trust of Public Lands have purchased lands and then sold them to the district so that these lands can be included in the program. The districts also work in

cooperative acquisition and management programs with local governments.

Before an area is acquired by a district, management plans are developed. These plans assess the area's resources, including water resources, fish and wildlife resources, native plant communities, archaeological and historical sites, recreational uses, and agricultural use. Any agency that has a stake in the use of the lands or that has expertise in a specific category of use is encouraged to participate in the drafting of management plans, because each area is unique and requires consideration of a wide range of resources.

During the first year of the program, each district was required to contribute 10% of the purchase price of any SOR parcel, but this requirement was recognized as a roadblock to acquisition and was eliminated. Another early problem in administering the program was that once lands were acquired, the funding needed to actually manage areas was nonexistent. To alleviate the problem, a measure was enacted in 1985 to allow districts to apply up to 10% of their acquisition funds to management; there is some interest in increasing this amount to 20% as more land comes into the SOR system.

Example. In 1981, the first joint water management district–Nature Conservancy land acquisition entailed the purchase of the 105,454-ha (260,380-acre) Seminole Ranch in Orange County. This ranch, lining 31 km (19 miles) of the St. Johns River, includes all or part of eight lakes and contains both freshwater and brackish wetlands that provide habitat for the endangered bald eagle (*Haliaeetus leucocephalus*) and several State protected species. St. Johns River Water Management District was unable to acquire the entire tract, so The Nature Conservancy bought part of the ranch and sold it back to the district at favorable terms.

A proposed Save Our Rivers acquisition of the South Florida Water Management District that is described in the 1989 5-year plan is a 245-ha (605-acre) parcel on Big Pine Key. The estimated value was $3.6 million. The area is unique in that it contains the only large freshwater aquifer in the Florida Keys. The water resources of the key are considered to be extremely vulnerable to saltwater intrusion, depletion and pollution by septic tanks, and depletion by commercial and domestic wells.

Because of its freshwater resources, the key is home to endangered and threatened animal and plant species that depend on fresh water for survival; the most notable of these is the key deer (*Odocoileus virginianus clavium*). The Key Deer National Wildlife Refuge, encompassing parts of both Big Pine Key and adjoining No Name Key, is managed by the U.S. Fish and Wildlife Service. If the district acquires the additional acreage, it will be managed by the U.S. Fish and Wildlife Service as part of the refuge.

Districts may also dedicate lands acquired as gifts. In 1973, the Northwest Florida Water Management District added a 27.4-km (17-mile) stretch of the Escambia River to the SOR program. Half of this was a gift, and half was purchased from the St. Regis Paper Company.

Other coalitions have formed in promoting the SOR program. Partnerships between The Nature Conservancy and water management districts have been mentioned. The combined efforts of various State and local agencies, the U.S. Fish and Wildlife Service, and various corporations and foundations have contributed to the success of the Save Our Rivers Program, not only in identifying and acquiring lands, but also in forming cooperative agreements for managing the areas.

Evaluation. The Save Our Rivers program is an effective program for acquiring land and protecting critical water resources. By providing funding, the DER allows the districts to gain title to land, and this has a number of clear advantages. One advantage is that rather than requiring a district to compel landowners to manage private lands in a prescribed fashion, the SOR program creates a situation in which the district is free to develop management plans that achieve the purposes of the program. Also, the program encourages the involvement of a variety of participants; once the land has been set aside, cooperative agreements are often formed between the districts and appropriate management agencies. In this way, districts can fit the management objectives to the agency with the expertise or allow local governments to manage lands set aside for local use or recreation.

Ownership of lands by districts also establishes more certainty about the future uses of the land than if it remained in private ownership. For example, development of district-owned SOR lands may not occur if such development conflicts with the purposes of the SOR designation. Once an area is acquired for the SOR program, the designation cannot be changed except by legislative enactment. Finally, the formulation of 5-year acquisition plans encourages ongoing thinking about future efforts to protect Florida's land and water resources.

Land Acquisitions for Conservation or Recreation

Opportunity. Setting aside State lands for recreation or conservation protects land and related water resources.

Background. The Conservation and Recreation Lands Trust Fund, established within the DNR, is used to acquire lands containing significant historical, cultural, or natural resources. Although the intent of the legislation is to provide such areas in all parts of the State, the priority for acquisition is densely populated locales, Areas of Critical State Concern that have inadequate land development regulations [F.S. 253.023(1)], and other environmentally endangered lands.

The Environmentally Endangered Lands program, established in 1972, was the forerunner of the current Conservation and Recreation Lands (CARL) program, which was initiated in 1979. The original program was intended as a means of conserving lands containing scarce or unique natural communities, critical habitat for threatened or endangered species, or outstanding geologic features. The CARL program assumed the same criteria and added the following:

- lands for use and protection as natural floodplain, marsh, or estuary, if the protection and conservation of such lands are necessary to enhance or protect water quality or quantity or to protect fish or wildlife habitat that cannot adequately be accomplished through local, State, and Federal regulatory programs;
- lands for use as State parks, recreation areas, public beaches, State forests, wilderness areas, or wildlife management areas;
- lands for restoration of altered ecosystems to correct environmental damage that has already occurred; or
- lands for preservation of significant archaeological or historical sites [F.S. 253.023 (3)(b)(1 to 4)].

Three entities operate in designating CARL lands. The Land Acquisition Selection Committee, composed of representatives from involved State agencies, selects and prioritizes projects. Actual negotiations for land acquisitions are done by the Division of State Lands in the Department of Natural Resources. The Board of Trustees of the Internal Improvement Trust Fund (the governor and the cabinet) oversees the CARL program and allocates money from the CARL Trust Fund. Excise taxes on documents (F.S. 201.15) and the severance of phosphate rock [F.S. 211.3103(2)(b)(1)] are the sources of revenue for the fund. Initially, all funds were used for acquisition, but at this time 10% of the monies credited to the CARL Trust Fund are reserved for management, maintenance, and capital improvements. Although the preferred means of acquiring lands is through purchase from a willing seller, the power of eminent domain can be exercised to acquire CARL areas. The CARL program is evaluated annually by the selection committee, and areas may be added, deleted, or shifted in priority.

Through the CARL program, more than 40,500 ha (100,000 acres) were acquired at a cost of $150 million from 1981 through 1987 (Conservation and Recreation Lands Annual Report 1988). The $200 million Environmentally Endangered Lands bond fund allowed for the purchase of an additional 157,950 ha (390,000 acres) before the fund was depleted and the land was put under the management of the CARL program. During fiscal year 1987–88, 13,157 ha (32,486 acres) costing $50.7 million were added, and final options payments of $3.7 million were made on another 1,100 ha (2,717 acres) (Conservation and Recreation Lands Annual Report 1988).

Proposals for CARL additions are accepted from State agencies, local governments, and private parties. These proposals are analyzed for appropriateness, discussed at public hearings, and reviewed and voted on at several points in the process. Once a list is compiled and prioritized by the committee, the Board of Trustees of the Internal Improvement Trust Fund examines and approves or disapproves each listing. Individual projects can be omitted, but the priority order cannot be changed. Because funding for CARL acquisitions is limited, the review process at all phases is stringent. Thus, those lands most in need of protection can receive high priority.

Since the inception of the program, several refinements have been made that contribute to its efficiency. First, a systematic and multidisciplinary process of evaluation has replaced the more informal process used in the early days of the program. Second, in 1984 the governor and cabinet requested that the Land Acquisition Selection Committee develop a long-range land preservation plan for Florida that considered land management efforts made by Federal, State, and private entities. The compilation of this information became the Florida Statewide Land

Acquisition Plan, and all projects recommended under CARL, the Land Acquisition Trust Fund, or Save Our Coasts must conform with this plan and with the State Comprehensive Outdoor Recreation Plan. The intent of this requirement is to promote coordination among various land-acquisition programs and to remove undue subjectivity from the selection process.

The third change in the program was the development of the Florida Natural Areas Inventory (FNAI) for use in the CARL selection process. This cooperative effort between the DNR and The Nature Conservancy is a data base detailing unique biotic communities, rare and endangered plant and animal species and their habitats, and geological features found in Florida. Not only is this information used in evaluating CARL proposals, but also many people in Florida who deal with natural resource management find the information invaluable in their work (Conservation and Recreation Lands Annual Report 1988).

Example. One of the 69 projects listed in the 1988 CARL annual report is North Key Largo Hammocks, a 1,317-ha (3,252-acre) parcel on Key Largo that is recommended for designation as an Environmentally Endangered Land. The best example of tropical rockland hammock in the United States is in this area, which supports a variety of endangered and threatened plant and animal species. The property is adjacent to John Pennekamp Coral Reef State Park and will act as a buffer to that area by protecting water quality. North Key Largo Hammocks is within an Area of Critical State Concern, adjacent to waters classified as Special Waters under the Outstanding Florida Waters designation. However, the area surrounding North Key Largo Hammocks is being developed, and plans for development within the proposed project area are being considered. Because of these pressures, the selection committee recommended speedy acquisition. As of the release of the 1988 report, 1,332 acres had been acquired (Conservation and Recreation Lands Annual Report 1988). Portions adjacent to John Pennekamp Coral Reef State Park are to be managed as part of the park, with other areas under the direction of the Division of Recreation and Parks of the DNR.

The Fakahatchee Strand in Collier County is another ongoing CARL project. Almost 14,175 ha (35,000 acres) of the strand were purchased under the Environmentally Endangered Land program, 4,698 ha (11,600 acres) were acquired under the CARL program, and about 11,097 ha (27,400 acres) remain to be added to the project. It is estimated that this 10,935 ha (27,000 acres) represents 8,800 owners. While the preferred method of acquisition is that of dealing with willing sellers, the legislature authorized eminent domain because the area is considered to be a vulnerable and vital ecosystem that has regional importance.

The unique strand swamp ecosystem contains many rare plant species and habitat for threatened and endangered species, including the Florida panther (*Felis concolor coryi*). The area is hydrologically linked to the Everglades system and also is important for the supply of fresh water for domestic use in South Florida.

Other CARL projects of the Everglades are Rotenberger (Palm Beach County), Save Our Everglades (Collier County), and East Everglades (Dade County). A broad goal of all of the Everglades projects is to restore the natural South Florida drainage patterns, thereby protecting Everglades National Park.

Evaluation. State acquisition and management of environmentally unique and endangered lands is an effective tactic for preserving wetlands and other surface water. One of the motivations for setting aside such lands is that the State has realized that regulations are sometimes ineffective in fragile ecosystems. Once a piece of land is developed, irreplaceable attributes of the natural system are lost forever, and only through outright ownership can systems be maintained. In the case of the Everglades acquisitions, water management activities north of Everglades National Park have disrupted the traditional sheet flow of water into the park. The resultant water quality degradation has directly affected the natural systems in the Everglades. Acquiring areas around the park as buffer zones is a partial answer to this problem.

Recreational Trails System

Opportunity. The Florida Recreational Trails Act of 1979 (F.S. 260.011–.018) encourages the use of nature trails for recreational activities. Public awareness of instream values is thus enhanced. Another benefit is that areas designated as canoeing trails may be afforded some protection; for example, obstructing passage in the water body may be prohibited.

Background. The Florida Recreational Trails Act of 1979 (F.S. 260.011–.018) was designed to promote recreational use of the State park and

State forest systems. Designated trails are used for jogging and sightseeing and also provide access for canoeing and swimming. The Department of Natural Resources administers the program and is authorized to acquire property through gift or purchase. Arrangements may be made to transfer recreational property to local government agencies if management at the local level is desirable.

Although the act promotes very general recreational values, F.S. 260.018 mandates that all State agencies ". . . shall recognize the special character of the waters designated as canoe trails and shall not take any action which will impair their use as designated."

Example. The Department of Natural Resources has designated 1,529 km (950 miles) of 36 streams as canoe trails under the Recreational Trails system. Many of these trails are found within the boundaries of State parks or State forests and are managed as part of the park or forest. Others flow through private land, and the banks of these streams are not open to public use.

Evaluation. Designation of a stream as a canoe trail may offer some level of protection because these areas are to be managed in such a fashion that use as a canoe trail will not be impaired by the actions of a State agency. Because many of these trails are within the boundaries of State-managed lands, there may be some protection offered to them simply because they are part of an area that is already being managed to provide for public use, while preserving environmental values. No examples were found of a canoe trail that was protected from development only to maintain recreational values, but promoting outdoor experiences in natural areas may increase public awareness of the importance of preserving riverine systems.

Wetland Management

Florida contains more wetlands than any other State: 20% of all wetlands in the United States are found in Florida (Gramling 1984). However, as Florida has grown in population, many wetland areas have been lost due to dredge and fill activities; since 1960, south Florida alone has lost more than 25% of its wetlands (Gramling 1984). The effects of these losses are many. Important fish and wildlife habitat has been destroyed, including that required for threatened and endangered species; susceptibility to uncontrolled flooding has been increased; and the wetlands' function as an absorber of nutrients and sediment has been lost. To regulate and control the unmitigated loss of wetlands, Florida has enacted several statutes that regulate the alteration of wetlands. Alteration includes dredge and fill activities, construction projects (piers, docks), and actions that pollute the water body. Generally, the Department of Environmental Regulation regulates riparian or estuarine wetlands, and the water management districts permit wetland alterations involving agriculture and silviculture and regulate isolated wetlands.

The Federal government has jurisdiction in navigable waters of the United States. By definition, these waters include those that have supported, are supporting, or could support interstate commerce. In tidal areas, they extend to the mean high water mark and in nontidal areas to the ordinary high water mark. Offshore, Federal jurisdiction extends 5.6 km (3 nautical miles). In some cases, such as the prevention of obstructions to navigation, this is extended to the seaward edge of the outer continental shelf. Permits from the U.S. Army Corps of Engineers are required for work in all of these areas, pursuant to Sections 9 and 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. Sections 401 and 403; Department of Environmental Regulation 1989). In addition, approval by the Trustees of the Internal Improvement Trust Fund is required in navigable waters with State-owned bottoms.

Under Section 404 of the Clean Water Act (33 U.S.C. 1344), Corps permits are required for the discharge of dredged or fill materials into waters of the United States. These include navigable waters, as described previously, and their tributaries, adjacent wetlands, and certain isolated wetlands.

Another means of protecting wetland areas is acquisition, which is done through the CARL program and through Save Our Rivers acquisitions. In addition, those lands designated as Areas of Critical State Concern nearly always contain wetlands, and water bodies targeted for improvement under the SWIM program include wetland areas. Passive stormwater management techniques that enhance wetlands by retaining floodwaters also protect wetlands. Each of these initiatives is discussed in other sections of this report. What follows in this section is an overview of the statutes with wetland protection and regulation as their primary objective.

Water Resources Restoration And Preservation Act of 1977

Opportunity. Requiring consideration of environmental effects in issuing dredge and fill permits may serve to protect instream values. Chapter 403.0615, Florida Statutes, which is administered by the DER, regulates dredge and fill activities in all waters of the State.

Background. The effects of dredge and fill activities on water quality are considered in determining whether or not to issue permits. Permit applications must provide reasonable assurance that the short- and long-term effects of the project will not result in violations of the water quality criteria for the classification category in which the body of water has been placed [F.A.C. 17-4.28(3)].

Example. In *Farrugia* v. *Frederick* [344 So.2d 921; Fla. Dist. Ct. App. 1977] a landowner was denied permission to construct an upland canal on the grounds that it would adversely affect waters reserved for recreation and for the propagation and management of fish and wildlife. The water quality degradation in the dead-end canal was viewed as a threat to surrounding waters, and it was ruled that the landowner could not build the canal.

Evaluation. The Farrugia case illustrates some measure of judicial support for the consideration of fish and wildlife protection in the interpretation of Chapter 403. However, the act does not address habitat degradation unless it is actually caused by impaired water quality due to dredge and fill activities. Therefore, only limited protection is given to wetland areas, because an activity could be permitted that destroyed habitat, as long as it did not impair water quality.

Warren S. Henderson Wetlands Protection Act of 1984

Opportunity. The Warren S. Henderson Wetlands Protection Act of 1984 (F.S. 403.91–.929) directs the DER to evaluate permits for wetland alterations. This allows the DER to consider effects on environmentally sensitive areas.

Background. The DER has regulatory jurisdiction of wetlands to their landward limits. This necessitates defining "wetland" and "landward unit."

Wetlands are defined using a vegetative index of about 270 species. The presence of any of these species or a combination of listed species as the dominant vegetation is evidence of a wetland area.

Once a wetland has been determined as existing, the landward limit of the area is usually defined as the point to which wetland vegetation grows. However, if this landward extent as thus determined occurs waterward of the mean high water line, jurisdiction may be exercised to the mean high water line (F.S. 403.905).

The need for permits to dredge or fill is clearly stated:

> No person shall dredge or fill in, on, or over surface waters without a permit from the department, unless exempted by statute or department rule [F.S. 403.905(1)].

Exemptions include many stormwater ditches operated by water management districts, provided they do not connect to Outstanding Florida Waters or Class I or Class II waters [F.S. 403.905(4)] and agricultural water management systems (F.S. 403.913).

When the DER considers a permit, the applicant must provide reasonable assurance that neither water quality standards nor the public interest will be violated [F.S. 403.906(1)(2)]. However, if the proposed alteration is within the confines of, or will have an effect on, an Outstanding Florida Water, the burden of proof is on the applicant to prove that the action will clearly be in the public interest [F.S. 403.906(2)]. Variables considered by the DER when determining public interest include public health, safety, and welfare; conservation of fish and wildlife and their habitat; effects on navigation and water flows; effects on fishing, recreation, and marine productivity; whether the project is temporary or permanent; effects on historical or archaeological resources; and the current uses being made of the area. Using these guidelines, the DER determines the degree to which the proposed project serves the public interest. Permits are then approved, denied, or tentatively approved with mitigation requirements [F.S. 403.906(1) and (2)].

Other provisions of the act charge the DER with consideration of cumulative effects so that the effects of ongoing and planned alterations are considered in total (F.S. 403.907). In addition, the DER is to compile a wetlands inventory and monitoring system, the results of which are to be reported to the legislature annually (F.S. 403.915).

Examples. From 1 October 1987 to 30 September 1988, the DER issued 2,013 wetland resource permits. Of these, 25% included permanent wetland loss, but only 1% of all permits issued allowed for losses of more than 2 ha (5 acres). Since passage of the Henderson Act, 324–446 ha (800–1,100 acres) of wetlands have been permanently lost annually. Most of this acreage had already been damaged due

to overdrainage, impoundment, or invasion by exotic species (Florida Department of Environmental Regulation 1989).

Mitigation for wetland loss or disturbance is accomplished through preservation, creation, or enhancement. Some permits issued by the DER were expressly for wetland restoration purposes; government agencies most commonly seek permits of this kind. In total, 318 permits resulted in 11,505 ha (28,408 acres) created or brought into DER jurisdiction from 1 October 1987 to 30 September 1988. Another 35,594 ha (87,886 acres) were improved over prepermit conditions, and 804 ha (1986 acres) were dedicated to permanent conservation easements (Florida Department of Environmental Regulation 1989).

A Florida Department of Transportation (FDOT) project to upgrade State Road 84 to interstate highway standards involved the largest single wetland loss during the 1988 fiscal year—29% of the State total. Wetlands in Class III Outstanding Florida Waters of the Big Cypress National Preserve and those along two canals were lost due to construction activities. Permit requirements included the construction of nine wildlife bridges across the highway, installation of a wildlife protection fence, and an agreement by FDOT to purchase lands along the highway that were part of the Save Our Everglades CARL project (Florida Department of Environmental Regulation 1989).

A permit issued to the St. Johns Water Management District accounts for 94% of the acreage created and improved in fiscal year 1988 and 17% of the wetland acreage lost in the State for the same period. The project was designed to improve water quality in the Upper St. Johns River basin, which is categorized as Class I waters. Other goals are to restore floodplains and marshes in several counties within the district. To accomplish these goals, the permit includes provisions for redirecting agricultural runoff by installing dikes and other water control structures. Another method for restoring wetlands authorized by the permit is by removing dikes from agricultural land; 10,863 ha (26,823 acres) will be restored in this way. Another 33,373 ha (82,403 acres) will be enhanced by improving water quality (Florida Department of Environmental Regulation 1989).

Another example of conditioning permits to mitigate wetland losses is that of the Ander Group of Florida. The permit for their 608-ha (1,500-acre) development and golf course on the Econlockhatchee and Little Econlockhatchee rivers included a requirement that the developer set aside 150 ha (370 acres) of forested wetland floodplain as a conservation easement (Florida Department of Environmental Regulation 1989).

Evaluation. A major accomplishment of the Henderson Act was the expansion of the DER's jurisdiction. By expanding the vegetative index, the acreage of regulated wetlands increased greatly.

One unresolved issue is the consideration of cumulative effects. Pursuant to F.S. 403.907, the DER must determine not only the effects of a proposed project, but also the effects of other approved projects in the area. Effects from projects that might "reasonably be expected to be located within the jurisdictional extent of waters, based on land use restrictions and regulations" must be considered as well. The DER cannot simply evaluate the effect of a single project but must determine what precedent will be set by granting the permit. The rationale for this is "equitable apportionment," or the idea that the sum total of allowable wetland losses should be distributed among a number of people. Otherwise, one permit could "use up" all of the losses. Although in principle equitable apportionment is sound, attempts to apply it have been difficult.

Groundwater Management

Groundwater supplies 87% of the domestic water requirements in Florida, and groundwater supplies are generally adequate from Florida's extensive system of aquifers. The exception to this is coastal areas (the most heavily populated areas) where the groundwater is saline.

This seeming abundance of groundwater, however, cannot be taken for granted. Because surface water and groundwater are interconnected, excessive losses of surface waters, through the filling of wetlands and the like, may cause groundwater levels to drop because wetlands provide recharge to aquifers. Also, contamination of groundwater due to saltwater intrusion and urban and agricultural runoff may not only threaten groundwater supplies, but also may impair surface water quality (Ausness 1987). Any activity that affects groundwater may also affect surface water, and vice versa. Therefore, in managing water supplies, planners must consider the hydrological relation between groundwater and surface water.

Groundwater in Florida comes from three major sources: the Floridian aquifer, the Biscayne aquifer, and the sand and gravel aquifer. Other small aquifers supply local water systems (Leve and Conover 1986).

The Floridian aquifer underlies the entire State and is the source of water for most of central and northern Florida. However, in south Florida, the top of the aquifer is as much as 305 m (1,000 feet) below the surface of the land; the Biscayne aquifer is the sole source for southeastern Florida's groundwater. The sand and gravel aquifer is an unconfined aquifer supplying water to communities in northwestern Florida. Because all of the aquifers depend on rainfall for recharge, winter months are dry in Florida, and groundwater levels usually drop during this time, especially because the dry season coincides with the tourist season. If spring and summer rainfall is adequate, groundwater recharge occurs as necessary. However, prolonged periods of drought are serious trouble for Florida's water supply.

The main forms of groundwater management in Florida include regulation of well fields, establishment of minimum water quality criteria (Chapter 17-3, Part IV, Florida Administrative Code) for groundwater, and storage of groundwater in canals or impoundments for release during the dry season. Retainment of floodwaters or excess surface waters during the rainy season is another management tool that can increase aquifer recharge. In addition, because the use of wetlands and other surface waters as recharge areas for groundwater is often accomplished at the expense of these surface waters, programs designed to protect recharge areas must also protect the surface water from depletion.

Permitting of Consumptive Uses of Water

Opportunity. Regulations that require permitting of wells are one means of managing groundwater resources. The Water Resources Act of 1972 (F.S. Chapter 373) includes provisions for regulating well construction.

Background. Well permitting is required for wells more than 2 inches in diameter. Those seeking permits must prove that their use will not interfere with existing uses, that the use is reasonable and beneficial, and that the use is in the public interest [F.S. 373.223(1)(a) to (c)]. All permits are issued for a limited duration, allowing for periodic reviews. Such reviews are important because a use that is judged to be reasonable and beneficial at one time may not continue to be if conditions change. When two applicants apply for permits, and not enough water is available to satisfy both requested uses, the permit deemed best able to serve the public interest is approved. If a determination cannot be made on the basis of public interest, a de facto priority system operates in the permitting process.

Example. In *Village of Tequesta* v. *Jupiter Inlet Corporation* [371 So.2d 663 (1979)] the Jupiter Inlet Corporation instituted an action for inverse condemnation against Tequesta, claiming that Tequesta's use of the water in the shallow aquifer underlying Jupiter's property deprived the corporation of the beneficial use of its property rights in the water. Tequesta's withdrawals of more than one million gallons per day, for which a permit had been granted, constituted the entire "safe yield" of the aquifer, because further withdrawals would cause saltwater intrusion. Jupiter's only other available source was a deep artesian aquifer, and the high cost of drilling and pumping 366-m (1,200-foot) wells led to Jupiter's claim of inverse condemnation.

The circuit court ruled in favor of Tequesta; however, when Jupiter appealed the decision, the district court reversed the ruling. The State Supreme Court overruled the reversal, stating that Jupiter's only remedy was to apply for a permit to use the groundwater, because the only uses of water exempted from the permit system are domestic uses by individuals [F.S. 373.219(1)], and Jupiter Inlet Corporation proposed to use the water to supply a number of condominium units.

Evaluation. Before the passage of the Florida Water Resources Act of 1972, the common law doctrine of correlative rights was applied to groundwater use. That is, a landowner could make reasonable use of the water underlying his land, subject to the right of a neighboring landowner to use the water if the aquifer was also underneath his land. However, the 1972 act instituted a permit system for all but individual domestic consumption. Therefore, any proposals for new withdrawals can be evaluated in terms of existing uses and the effect of additional wells on the health of the aquifer. This is an effective strategy for protecting groundwater resources.

Water Quality and Pollution Control

Opportunity. Statutes and rules that regulate discharges into State waters protect the biological, chemical, and physical integrity of both surface water and groundwater. Maintaining adequate flows in water bodies is necessary to provide dilution water for discharges.

Background. There is a strong statutory basis for protecting water quality in Florida. Article II, Section 7, of the Florida constitution requires

abatement of water pollution, and conservation and protection of the State's natural resources and scenic beauty. The policy of the Florida Air and Water Pollution Control Act states that

> It is declared to be the public policy of this State to conserve the waters of the State and to protect, maintain, and improve the quality thereof for public water supplies, for the propagation of wildlife, fish and other aquatic life, and for domestic, agricultural, industrial, recreational, and other beneficial uses, and to provide that no wastes be discharged into any waters of the State without first being given the degree of treatment necessary to protect the beneficial uses of such water [F.S. 403.021(2)].

Also, in Section101(a)(2) of the Federal Water Pollution Control Act, Congress declared that by 1 July 1983, water sufficient in quality for the protecting and propagation of fish and wildlife, and for water-based recreation, was a goal. Section 101(a)(3) of the act stated that the national policy is that discharge of toxic pollutants in toxic amounts was to be prohibited.

In defining the State Water Quality goals, the DER established some basic considerations regarding values to be protected.

- Beneficial uses of water, as defined by F.S. 403.061(12), are to be protected by water quality standards.
- Pollution that causes violations of water quality standards, whether caused by a long-established use or by a new use, is not to be tolerated.
- Water of better quality than prescribed by its designated use category is to be protected at that higher level.
- Outstanding Florida Waters should receive the highest level of protection.
- Activities outside the State that cause degradation of Florida's waters will be examined.
- Both the public and the private sector are equally responsible for complying with pollution abatement standards.
- Excessive nutrients, especially total nitrogen and total phosphorus, are a chief cause of water pollution, and standards for these nutrients must be carefully developed and applied.
- Water quality standards must be developed and enforced to protect human health.
- Many factors must be considered when determining water quality standards. The intent of the Environmental Regulation Commission is to use an "even-handed and balanced approach to attainment of water quality objectives" (Florida Rules of the Department of Environmental Regulation, Chapter 17-3.011).

Surface waters are classified by their designated uses, and each use category is subject to certain standards. The surface water classification scheme follows.

Class I — Potable waters

Class II — Shellfish propagation or harvesting

Class III — Recreation; propagation and management of fish and wildlife

Class IV — Agricultural supplies

Class V — Navigation, utility, and industrial use

(Florida Administrative Code 17-3.081)

Unless designated otherwise, surface waters are listed as Class III.

One class of Florida water given special protection is Outstanding Florida Waters (OFW). These include: surface waters in national parks, wildlife refuges, wilderness areas, and State parks; waters within areas purchased through the Environmentally Endangered Lands Bond Program or the Conservation and Recreation Lands Program; Florida Scenic and Wild Rivers; Federal Scenic and Wild Rivers; waters within national seashores, national marine sanctuaries, national estuarine sanctuaries, national monuments, and aquatic preserves; and special waters found to have exceptional recreational or ecological significance. A listing of the designated areas is found in Florida Administrative Code 17-3.041. Outstanding Florida Waters may also be listed as Class I, II, or III in the water classification system.

Example. In the 1984 case of *Grove Isle, Ltd.* v. *State Department of Environmental Regulation* [454 So.2d 571 (Fla. App. 1 Dist. 1984)] Grove Isle appealed the validity of the DER's Outstanding Florida Waters category after being denied permission to construct a concrete fixed-pier marina

in Biscayne Bay. Grove Isle complained that the Outstanding Florida Waters category was inconsistent with legislation authorizing the DER to group waters into classification according to their most beneficial uses. Additionally, Grove Isle charged that the DER's requirement that construction in, or discharges to, OFW's be demonstrated as being in the public interest was an invalid exercise of statutory authority.

The court agreed with this second point, but upheld the authority of the DER to designate certain environmentally sensitive waters as Outstanding Florida Waters so that they could be given a high level of protection.

Evaluation. The Grove Isle case upheld the validity of the Outstanding Florida Waters category but limited the stringency with which the DER can regulate the uses of these waters. However, because the OFW category is recognized as legitimate, the DER can set standards to protect water quality in areas thus designated.

Surface Water Improvement and Management Act

Opportunity. The Surface Water Improvement and Management Act (F.S. 373.451–.4595) directs water management districts to develop plans to clean polluted water bodies. The act also provides funding mechanisms for implementation, resulting in the restoration of water bodies to conditions that can support aquatic life and human uses.

Background. The Surface Water Improvement and Management Act of 1987 (F.S. 373.451), known as SWIM, was enacted because of such degradation of surface water quality that many water bodies had become unable to perform important functions [F.S. 373.451(2)]. Included among these functions are providing aesthetic and recreational enjoyment; habitat for fish, wildlife, and plants, including endangered and threatened species; drinking water; and economic benefits accrued from tourism and other water-dependent activities [F.S. 373.451(2)(a)-(d)]. Initially, several priority water bodies were designated: Lake Okeechobee, Biscayne Bay, Lake Apopka, the lower St. Johns River, the Indian River Lagoon, and Tampa Bay. Each water management district is to develop and implement improvement plans for any of these priority areas that lie within their boundaries. They must also list additional waters of regional or State significance within the district that should come under the protection of SWIM, in accordance with criteria developed by the DER.

After a body of water has been identified as requiring SWIM attention, plans are drawn up by the water management district with jurisdiction, in cooperation with the DER, the Game and Freshwater Fish Commission, the DNR, and local governments. The SWIM plans provide a comprehensive view of the water body in terms of uses, hydrology, conditions that have led to the need for restoration, governmental entities with jurisdiction over the water or the land within a 1.6-km (1-mile) perimeter of the water, and origins of point and nonpoint pollution. Specific remedial actions and timetables are also established by the SWIM plan. Proposed plans are subject to review by the public, the DER, the Game and Fresh Water Fish Commission, the DNR, the Department of Agriculture and Consumer Services, and any affected county or municipality, but the final approval for the plans is given by the DER.

Funding for the program is derived from two sources: the Surface Water Improvement and Management Trust Fund, and ad valorem taxes generated by the water management districts. Up to 80% of the cost of implementing programs can come from the fund, and the districts must generate the remaining 20%.

Example. One of the priority SWIM areas within the Southwest Florida Water Management District (SWFWMD) is Tampa Bay and its tributaries. The largest open-water estuary in Florida, with a surface area of 1,031 km^2 (398 square miles) at high tide, Tampa Bay provides both economic and environmental well-being (Southwest Florida Water Management District, n.d.). Increasing urbanization in the area has resulted in habitat destruction and water quality degradation. Freshwater inputs have been altered due to the effects of withdrawals and dams on tributaries that feed the bay. Restoration of the bay is a formidable undertaking due to the complexity of the problem and the coordination required among numerous entities with jurisdiction over Tampa Bay.

An internal committee of the SWFWMD worked with the Agency on Bay Management (ABM), which is part of the Tampa Bay Regional Planning Council. The staff of the SWFWMD wrote the management plan, and the ABM reviewed it. Officials from county and city governments of the three counties bordering the bay were also invited to review the plan, and public hearings and workshops allowed more input as

the management plan took shape. It is recognized that the goal of reversing damaging environmental trends is long-term, and the plan is designed to work on a series of these long-term goals.

The top SWIM priority for the South Florida Water Management District (SFWMD) is the cleanup of Lake Okeechobee. With an area of 730 square miles, it is the second largest freshwater lake in the United States (South Florida Water Management District 1989). Many uses are made of the lake and its waters, including flood control, irrigation, water supply, navigation, protection of fish and wildlife habitat, prevention of saltwater intrusion into well fields, recreation, and water supply for Everglades National Park (South Florida Water Management District 1989). The progressive degradation of water quality in the lake, primarily caused by phosphorus-rich runoff from agricultural lands north of the lake, is the main problem identified in the SWIM legislation. Nitrogen from agricultural runoff, point source discharges, and urban runoff also contribute to the problem. The Kissimmee River, Lake Okeechobee, and the Everglades are actually considered one hydrologic system. Eventually, the SWIM plan will address the water quality problems in the entire system. However, the legislature considered Lake Okeechobee the most severely affected. When delineating a study area, then, the district included major inflow tributaries to the lake, but excluded areas to which the lake's water is distributed.

A variety of management approaches have been tried in the past. Because of the complexity of the system and the number of effects on the lake, none of these approaches have been effective. By 1988, phosphorus levels in the lake peaked, and blue-green algae blooms became common. The SWIM plan represents an effort to analyze past practices and to design new management strategies that can help the district to achieve the goal of reducing phosphorus loading to the lake by 1992, as mandated by the SWIM legislation.

Evaluation. The SWIM program targets badly degraded bodies of water and sets in motion the means to restore them. The problems in these bodies of water have long been recognized, and efforts have been made to correct them. With SWIM, there is greater emphasis on coordination among the various entities with jurisdiction over each area, and funding is provided for assembling plans.

Implementation of these plans will be an immense task, requiring coordination among a variety of agencies. For the plans to be successful, agencies will need the resources to enforce the standards that they set. It will be several years before the accomplishments of the program can be recognized.

Water Recycling and Reuse

Opportunity. Florida's groundwater rule (Chapter 17-3, Part IV, Florida Administrative Code) encourages recycling to conserve the quantity and quality of limited groundwater resources.

Background. Most reclaimed water is used for irrigating golf courses, parks, or home gardens, or for cooling purposes in industrial processes. Ambitious recycling programs that will reuse water for fire protection, car washing, and toilet flushing are currently being planned by some cities. Use of these approaches could drastically decrease net water consumption and alleviate the demand for highest quality waters.

Example. The City of Altamonte Springs, 10 miles north of Orlando, began investigating the feasibility of using reclaimed water in response to a rapid drawdown of the aquifer. Project APRICOT (A Prototype Realistically Innovative Community of Today), a plan to reuse highly treated wastewater effluent, is designed to lessen the demand on potable water supplies, protect the environment by decreasing nutrient discharges into the Wekiva River, and save consumers money. A key feature of Project APRICOT is a dual distribution system, whereby a dwelling or a commercial operation would have one system for potable water for household or personal uses, and another system for those uses that do not require potable water. Eventually, the city hopes to use reclaimed water for irrigation (residential, commercial, and municipal), fire protection, lake level control, ornamental fountains, toilet flushing in new office buildings, indoor sprinkler systems, and car washing. The quality of the water distributed from the wastewater treatment plant will meet current drinking water standards, but it will not be released as potable water.

The project was to begin operation in September 1989 on a limited basis; the area of service will broaden as distribution lines are constructed. Once available, connection to the service will be mandatory for public, commercial, office, industrial–warehousing, and multifamily development. Single-family homes built after 1 January 1989 will be required to include mains for dual distribution and will be connected to the service when it becomes available. Older single-family homes may receive reclaimed water as the dual distribution system is extended at the request of 51% of property owners in an area.

The long-term goal of Project APRICOT is to replace 60–80% of current potable water use with reclaimed water. The initial capacity of the plant will be 6 to 6.5 mgd. Once the system is fully operational, the capacity may be as great as 12.5 mgd (Marcous 1987).

Another example of a water reuse project is in the city of St. Petersburg. The initiative for this program came in the early 1970's, when the EPA mandated changes in the city's wastewater disposal process because the practice of discharging effluents into Tampa Bay had caused serious pollution problems. A secondary problem was that all of St. Petersburg's potable water is drawn from well fields up to 81 km (50 miles) north of the city. As population increased, heavy demands were placed on that system. Although water reuse was initially approached as an affordable solution to the Tampa Bay problem, it has alleviated the second problem, water supply shortages, as well. As of 1987, no wastewater discharges from St. Petersburg were released into Tampa Bay, and more than 5,000 customers were using reclaimed water. Most of the water is used for irrigation.

Unlike Altamonte Springs, St. Petersburg has a fairly stable population (about 250,000), and overall water use is fairly consistent from year to year. While the potable water system includes 5,632 ha (3,500 miles) of pipelines delivering 40 mgd, reclaimed water uses 367 km (228 miles) and delivers 20 mgd. Most uses of reclaimed water do not involve installing dual distribution systems in new construction but rather retrofitting existing systems. Nevertheless, about 1,500 new customers are connected to the service annually.

St. Petersburg's water reuse program has been operating since 1981. During the first year, it served 123 customers, irrigating 725 ha (1,791 acres). In 1987, it served 5,114 customers irrigating 1,833 ha (4,526 acres). The greatest increases have been in the category of residential use; in 1987 one-third of the reclaimed water was used to irrigate residential property. Responding to the shift in user categories, the city has developed guidelines for proper use of this nutrient-rich water on residential grasses and shrubbery. Dubbed "Project Greenleaf," the guidelines are based on studies of ornamental plants common to the St. Petersburg area that are watered with reclaimed water.

At this time St. Petersburg has the largest water reclamation system in the United States, and it is estimated that those who use reclaimed water reduce their consumption of potable water by 48%. From an original goal of developing alternative means of wastewater disposal, the reclaimed water system has become a vital water-saving mechanism.

Evaluation. Water reuse programs are an attractive solution to both water quantity and water quality problems. From the standpoint of quantity, recycling water and using it for irrigation and other nonpotable uses lessens a community's dependence on the potable water system. In areas facing aquifer depletion and the problem of supplying water to residents in the future, supplementing the system with reclaimed water may relieve the problem, at least temporarily.

In terms of quality, reusing treated wastewater is an alternative to discharging into surface waters or injection into wells, and both are methods that degrade water quality. Treating effluent to secondary standards also lightens the burden on full-service wastewater treatment plants.

The main problem with wastewater recycling is start-up costs. In the case of St. Petersburg, the Environmental Protection Agency funded much of the initial project; however, this funding is no longer available. Altamonte Springs implemented a procedure by which the developers of new construction are required to pay construction fees, and developers must pay advance funds that they can recover through the free or reduced-fee use of reclaimed water for specified periods of time. During the first phase of distribution, abandoned water lines will be used to deliver reclaimed water. Tying charges to actual users, rather than issuing bonds and raising taxes, increases the acceptability of the project to the general public.

In growing communities, requiring dual distribution systems for new construction is accomplished with relative ease, especially if access to reclaimed water will lower the consumer's water bills. In more-established cities, retrofitting is necessary, and the physical task of laying miles of pipeline is time-consuming and expensive. This does not mean that using reclaimed water cannot be accomplished in these areas, but use may be somewhat restricted due to the complexities of retrofitting existing structures.

Protection and Management of Fisheries and Wildlife

Florida Endangered and Threatened Species Act of 1977

Opportunity. Laws that protect designated species can protect habitat. This includes the mainte-

nance of streamflows and the preservation of wetland areas.

Background. Florida has more endangered and threatened species than any other State. Among the forces that jeopardize their continued existence are modification or loss of habitat; overuse for commercial, sporting, scientific, or educational purposes; disease; predation; inadequacy of regulatory mechanisms; and other natural or manmade factors [F.S. 372.072(3)(b)].

Two agencies are charged with implementation of the Endangered and Threatened Species Act: the Game and Fresh Water Fish Commission, which manages freshwater and upland species, and the Department of Natural Resources, which manages marine species. These two agencies also work with the Department of Education's Office of Environmental Education in designing school programs to promote citizen awareness [F.S. 372.072(4)(b)].

This act does not contain any regulations, nor does it vest enforcement authority in the implementing agencies. Rather, it gives them an advisory role. Thirty days before the start of each legislative session, the director of the Game and Fresh Water Fish Commission and the executive director of the Department of Natural Resources are to submit plans for the management and conservation of endangered and threatened species, a progress report on the previous year's endeavors, and proposals for new legislation [F.S. 372.072(5)]. Although the act protects listed species from human predation, it does not necessarily prohibit habitat destruction.

Example. Permitting agencies, including the DER, the U.S. Army Corps of Engineers, and local governments, send permits for dredge and fill activities and other activities that affect habitat to the Game and Fresh Water Fish Commission or the DNR for review. These are examined, and modifications are proposed as necessary. Although the recommendations are just that—recommendations—and do not carry enforcement authority, most permitting agencies consider them. However, in the face of pressure for development of various kinds, habitat protection often takes a back seat.

One requirement of the Surface Water Improvement and Management Act (SWIM) is that SWIM plans be reviewed and commented on by the Game and Fresh Water Fish Commission regarding the effects of the plan on wildlife and freshwater aquatic life and their habitats [F.S. 373.455(3)]. If adverse effects of the plan outweigh beneficial effects on these resources, the Commission is to recommend modifications to the plan at a public hearing conducted by the water management district with jurisdiction over the plan. Also, the Commission is to present additions to, or modifications of, the plan that could result in benefits to freshwater fish, wildlife, and their habitats. The Department of Natural Resources is to do the same for marine and estuarine aquatic life and habitats [F.S. 373.455(4)].

Evaluation. The Game and Fresh Water Fish Commission and the DNR are in the unenviable position of being mandated to protect endangered and threatened species without being given the authority to fully accomplish this objective. Illegal hunting of these species is prohibited, but habitat degradation or destruction is not necessarily disallowed. Most State agencies that engage in activities that affect fish and wildlife resources are required to consult with the commission or the DNR, and this is done. However, the findings of these consultations are not necessarily accorded high priority when licenses and permits are issued because the directive is merely that the permitting agencies consider the findings, but it does not specify exactly what weight is to be accorded them.

Land Acquisition to Protect Habitat

Opportunity. Land acquisition to protect habitat of endangered and threatened species affords protection to wetlands, streams, estuaries, and lakes. The Conservation and Recreation Lands Program (CARL) is one vehicle for these acquisitions.

Background. Florida supports a number of land acquisition programs; these have been discussed in the Land Use Regulation section of this report. Whereas many of these acquisitions are proposed for the purposes of preserving the quality and quantity of water, some are motivated by the desire to protect critical habitat areas.

Example. One project pursued through the CARL program in 1988 was the Three Lakes–Prairie Lake Addition, which qualified as an Environmentally Endangered Land. A large population of nesting bald eagles is found on the addition, and the project area and adjacent State-owned lands have been selected as sites for the reintroduction of the whooping crane (*Americana*) in Florida.

The specified purpose of the acquisition is to protect habitat critical to endangered species. This will be achieved by adding the parcels to the Three Lakes Wildlife Management Area and the Prairie Lakes State Preserve. Management responsibili-

ties for the expanded areas will be divided, with the Game and Fresh Water Fish Commission as the lead agency and the Division of Recreation and Parks of the DNR playing a secondary role.

The St. Martins River project in Citrus County is another proposed CARL acquisition that is listed because it contains undisturbed habitat for threatened, endangered, and unusual species. If added to the system, it will increase the size of the St. Martins Marsh Aquatic Preserve. The Division of State Lands of the DNR will assume management responsibility for this parcel.

These are but two of the CARL acquisitions that are designed with habitat preservation as a primary consideration.

Evaluation. The CARL program was specifically tailored to provide protection for critical State lands that receive inadequate protection from existing statutes and regulations. Because wetland regulations do not place habitat protection at a high priority, and the Florida Endangered and Threatened Species Act affords only the opportunity to comment on the alteration or destruction of habitat, outright land acquisition seems to be a more effective solution to the problem. Wetland and riparian areas may be protected because habitat preservation is accorded high priority in CARL management plans.

Coastal Zone Management

The coastal areas of Florida are among the main attractions in the State, for both tourists and permanent residents. As the State has continued to grow, the bulk of the side effects of growth has been felt near the coast. Flood control and land development have caused disruption of traditional sheet flow patterns in southern Florida, degraded water quality, and been the cause of water shortage problems. The estuaries of Florida, which are buffer zones between fresh water and salt water, are home to many marine species during part of their life cycle. These estuaries are being harmed due to water pollution, loss of estuarine habitat because of dredge and fill activities, and disruption of freshwater flows from the rivers that empty into the estuaries (excessive upstream consumption). Although there is great pressure for the development of coastal areas, excessive development will destroy the very characteristics that have historically attracted people to Florida. These problems are difficult to manage because of their complexity, differing opinions in the State as to how they should be approached, and the multitude of State agencies with jurisdiction over coastal resources. These are issues that many Floridians are attempting to address so that coastal areas will be given a high level of protection.

Florida Coastal Zone Management Act of 1978

Opportunity. Developing management plans for coastal areas that coordinate the authority of various State agencies allows for protection of coastal resources. The Federal Coastal Zone Management Act (CZMA) of 1972 (P.L. 92-583) provides funding mechanisms for State governments that develop federally approved coastal management plans.

Background. For coastal management plans to be approved, they must accomplish several objectives. Federal requirements are that these plans address the need to give certain coastal resources special protection. The plans must reexamine existing policies, or propose new policies, that would adequately protect such resources, and they must consider the national interest in the siting of facilities that are of local importance. The plans must be legally enforceable, and the State must have sufficient organizational capabilities to implement them. As plans are developed, communication is required with agencies at all levels of government, with interest groups, and with the general public.

In 1978, the Florida Legislature passed the Florida Coastal Zone Management Act. Under this act, the Department of Environmental Regulation was directed to develop a coastal management program for examination by the Federal government. The decision was made that an abundant source of authority for coastal zone regulation did exist in the State at that time, and that the goal of the Coastal Management Program (CMP) would be to coordinate the various statutes, regulations, and rules so that they could be more effectively implemented. Because of this decision, there is not only one piece of legislation that guides management decisions in coastal areas, but many.

For example, Chapter 403 of the Florida Statutes regulates activities in all waters of the State, and it is based on the use of the police authority to regulate for the health, safety, and welfare of its citizens. The U.S. Army Corps of Engineers may also exercise jurisdiction in certain navigable waters of the State. In some cases, there is clear distinction between these various waters, but at other times they overlap. Therefore, more than one agency may claim jurisdiction over certain waters. The Department of Environmental Regulation is the lead agency under the Coastal Zone Manage-

ment Act. A primary task of the DER is coordination of State and local agency programs that relate to coastal resources.

Many programs exist in Florida that protect coastal resources. Some of these were specifically designed to address coastal issues, and others, such as the State park system, encompass both coastal and inland waters. A partial listing of programs currently in use in Florida includes the Outdoor Recreation and Conservation program, State wilderness areas, the aquatic preserves system, Save Our Rivers, Save Our Coast, Conservation and Recreation Lands, Environmentally Endangered Lands, the Recreational Trails system, Developments of Regional Impact, and Areas of Critical State Concern.

When coastal counties prepare their Comprehensive Plans, the question of properly managing the coastal zone so that it can be both enjoyed and protected is paramount. Numerous local, regional, State, and Federal agencies share jurisdiction over coastal areas. Coordination of the statutory powers and agency jurisdictions is a complex task.

Example. Robert A. Peterson, a property owner on Pine Island, applied to the DER for a permit to fill saltwater swampland on his land. Of the 40.5 ha (100 acres) of waterfront property, about 20 ha (50 acres) were mangrove wetlands. It was this wetland area that he proposed to fill.

Pursuant to Chapter 403, Florida Statutes, which gives the DER jurisdiction over waters of the State, the permit was denied due to the anticipated harmful effects on the waters and the marine ecology of the area. In addition, Rule 17-2.28(3), Florida Administrative Code, requires that a person applying for such a permit demonstrate that the proposed project will not interfere with the conservation of fish, marine life, wildlife, or other natural resources.

Evaluation. Numerous opportunities exist to protect coastal resources in Florida. The challenge is coordinating the efforts of the various State agencies. In some instances, agencies may disagree as to how coastal areas should be managed. Negotiating long-term plans for coastal zone management is a task that Florida currently faces.

References

Ausness, R. C. 1987. The influence of the model water code on water resources management policy in Florida. 3 Journal of Land Use and Environmental Law 1.

DeGrove, J. M. 1984. Land growth and politics. Planners Press, Washington, D.C. 454 pp.

Florida Department of Environmental Regulation. 1989. Report to the legislature on permitted wetlands projects, October 1, 1987–September 30, 1988. Florida Department of Environmental Regulation, Tallahassee. 24 pp.

Gramling, G. F., III. 1984. Wetland regulation and wildlife habitat protection: proposals for Florida. 8 Harvard Environmental Law Review 365.

Leve, G. W., and C. S. Conover. 1986. Water for Florida cities. U.S. Department of the Interior–Geological Survey, Water Resources Investigation Report 86-4122. 30 pp.

Marcous, A. 1987. Project APRICOT: one city's plan to eliminate the threat of a water shortage. 61(5):11–12. Quality Cities.

South Florida Water Management District. 1989. Interim Surface Water Improvement and Management (SWIM) plan for Lake Okeechobee. Part I, Water Quality. Part VII, Public Information. South Florida Water Management District, West Palm Beach. 174 pp.

Southwest Florida Water Management District. n.d. A citizen's guide to the SWIM priority list. Southwest Florida Water Management District, Brooksville. 23 pp.

Supplemental Reading

Apalachee Regional Planning Council. 1989. Board orientation booklet. 54 pp.

Ausness, R. C. 1983. Water rights legislation in the East: a program for reform. 24 William and Mary Law Review 547.

Blackwelder, B., and P. Carlson. 1982. Survey of water conservation programs in the fifty States: model water conservation program for the Nation. Environmental Policy Institute, Washington, D.C. 140 pp.

Brindell, J. R. 1980. Florida and coastal zone management. 54 Florida Bar Journal 295.

Brown, M. T., J. M. Schaefer, et al. 1987. An evaluation of the applicability of upland buffers for the wetlands of the Wekiva basin. Final Report. University of Florida, Gainesville. 33 pp.

Byers, A., and G. Willson. 1988. Keeping it wet and wild. The Nat. Conserv. Mag. 38(4):20–24.

Camp, Dresser, and McKee, Inc. 1987. Reclaimed water system master plan update: executive summary. City of St. Petersburg Public Works Administration, Department of Public Utilities, St. Petersburg, Fla. 21 pp.

Department of Public Works, Reclaimed Water Division. 1988. Policies and regulations governing the installation and use of the reclaimed water system. City of Altamonte Springs, Fla. 30 pp.

Dewsnup, R. L., and D. W. Jensen, editors. 1973. A summary–digest of State water laws. National Water Commission, Arlington, Va. 826 pp.

Environmental Efficiency Study Commission. 1987. Report of the Environmental Efficiency Study Commission to the Florida Legislature. Environmental Efficiency Study Commission, Tallahassee, Fla. 28 pp.

Environmental Efficiency Study Commission. 1988. Managing Florida's environmental assets. Environmental Efficiency Study Commission, Tallahassee, Fla. 56 pp.

Florida Department of Community Affairs. n.d. Alternatives to development of regional impact review. Florida Department of Community Affairs, Tallahassee. 15 pp.

Florida Department of Community Affairs. 1976. Excerpt from DRI guidebook. Florida Department of Community Affairs, Tallahassee. 65 pp.

Florida Department of Environmental Regulation. n.d. Florida state of the environment: the Department of Environmental Regulation and your environment. Florida Department of Environmental Regulation, Tallahasse. 47 pp.

Florida Department of Environmental Regulation. 1987. Florida's Environment. Florida Department of Environmental Regulation, Tallahassee. Vol. 1. No. 2. 4 pp.

Florida Department of Environmental Regulation. 1988. Florida state of the environment: groundwater. Florida Department of Environmental Regulation, Tallahassee. 20 pp.

Guttman, J. M. 1981. Standing of private citizens to sue for nuisance upheld. 21 Natural Resources Law Journal 895.

Hilley, D. V. 1984. The Warren S. Henderson Wetlands Protection Act of 1984: enough protection? 9 Nova Law Journal 141.

Hopping, W. L., and W. D. Preston. 1983. The Water Quality Assurance Act of 1983—Florida's "great leap forward" into groundwater protection and hazardous waste management. 11 Florida State University Law Review 599.

Kemp, D. J. 1982. Interbasin transfers of water in Florida: common law and the Water Resources Act. 56 Florida Bar Journal 8.

Land Acquisition Selection Committee. 1986. Florida statewide land acquisition plan. Land Acquisition Selection Committee, Tallahassee, Fla. 68 pp.

Land Acquisition Selection Committee, Liaison Staff, and the Division of State Lands. 1988. Conservation and recreation lands annual report. Tallahassee, Fla. 493 pp.

Maloney, F. 1979. Florida's reasonable–beneficial water use standard: have east and west met? 31 University of Florida Law Review 253.

Maloney, F. E., S. J. Plager, and F. N. Baldwin, Jr. 1968. Water law and administration—the Florida experience. University of Florida Press, Gainesville. 488 pp.

Maloney, F. E., R. C. Ausness, and J. S. Morris. 1972. A model water code. University of Florida Press, Gainesville. 373 pp.

Martin, R. W., Jr. 1980. Areas of critical State concern: some unresolved issues. 54 Florida Bar Journal 381.

Neigo, S. J. 1982. Wastewater reuse in Florida: an idea whose time has come. 56 Florida Bar Journal 626.

Neitzke, E. K. 1981. Salt water intrusion: Florida's legal response. 55 Florida Bar Journal 759.

Orlando Sentinel. 12 March 1987. "A reprieve for the Wekiva."

Orlando Sentinel. 12 March 1987. "Wekiva buffer idea comes back to life."

Orlando Sentinel. 1 May 1988. "Drage urges compromise to get river protection bill."

Parnell, J. R., J. V. Towry, and L. Robinson. 1988. Project Greenleaf. City of St. Petersburg Public Utilities Department, St. Petersburg, Fla. 8 pp.

Smith, R. A., editor. 1984. State of Florida: regulation and review procedures for land development. Florida Department of Environmental Regulation, Tallahassee, Fla. 242 pp.

St. Johns River Water Management District. 1988. Public hearing: final rule adoption on Wekiva River basin standards and criteria. St. Johns River Water Management District, Palatka, Fla. 117 pp.

South Florida Water Management District, Save Our Rivers Division. 1989. Save Our Rivers five year plan information booklet. South Florida Water Management District, West Palm Beach. 65 pp.

Southwest Florida Water Management District. 1989. SWIM Currents. Southwest Florida Water Management District Brooksville. 4 pp.

Suwannee River Water Management District. 1983. Water shortage plan. Suwannee River Water Management District, Live Oak, Fla. 52 pp.

Suwannee River Water Management District. 1988. Surface Water Improvement and Management plan. Suwannee River Water Management District, Live Oak, Fla. 89 pp.

Suwannee River Water Management District. 1989. Steinhatchee River basin assessment: interim report. Suwannee River Water Management District, Live Oak, Fla. 88 pp.

U.S. Army Corps of Engineers. 1987. Water resources development in Florida 1987. U.S. Army Corps of Engineers, Jacksonville, Fla. 100 pp.

U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Office of Coastal Zone Management and State of Florida Department of Environmental Regulation, Office of Coastal Management. 1981. The Florida coastal management program: final environmental impact statement. U.S. Department of Commerce, Washington, D.C. 634 pp.

Walker, S. 1988. State regulatory standards for mitigation and restoration. Jon A. Kusler, ed.

Proceedings of the national wetland symposium: mitigation of impacts and losses, 8–12 October 1986, New Orleans, La. Association of State Wetland Managers, Berne, N.Y. ASWM Tech. Rep. 3. 460 pp.

Walker, S. A., and S. J. Neigo. 1982. Administrative proceedings before the water management districts. 56 Florida Bar Journal 475.

Wanielista, M. P. 1987. Recharge criteria for the Wekiva River basin. Unpubl. ms. 26 pp.

Water Resources Law 1986. Proceedings of the national symposium on water resources law. American Society of Agricultural Engineers, St. Joseph, Mich. 242 pp.

Wershow, J. S. 1980. An update—legal implications of water management for Florida's future. 54 Florida Bar Journal 526.

Wood, D. A. 1988. Legal protection for Florida's endangered species, threatened species and species of special concern. State of Florida Game and Fresh Water Fish Commission, Tallahassee. 19 pp.

Burkardt, Nina. 1990. **Opportunities to Protect Instream Flows and Wetland Uses of Water in Florida.** U.S. Fish Wildl. Serv., *Biol. Rep.* 90(7). 32 pp.

This publication is one of a series of similar documents that provides a survey of State prerogatives and programs that may be used to protect the instream and wetland uses of water. Most of the opportunities for protecting instream flows are related to fish and wildlife habitat, although many other instream uses are considered, including recreation, navigation, downstream delivery, and waste load assimilation. This document illustrates methods to protect instream and wetland uses within the context of existing laws and regulations.

Key words: Water conservation, water flow, water law, water resources, water rights, watersheds, water supply, habitability, land use, wetlands.

U.S. GOVERNMENT PRINTING OFFICE: 1990-773-216/20014

Burkardt, Nina. 1990. **Opportunities to Protect Instream Flows and Wetland Uses of Water in Florida.** U.S. Fish Wildl. Serv., *Biol. Rep.* 90(7). 32 pp.

This publication is one of a series of similar documents that provides a survey of State prerogatives and programs that may be used to protect the instream and wetland uses of water. Most of the opportunities for protecting instream flows are related to fish and wildlife habitat, although many other instream uses are considered, including recreation, navigation, downstream delivery, and waste load assimilation. This document illustrates methods to protect instream and wetland uses within the context of existing laws and regulations.

Key words: Water conservation, water flow, water law, water resources, water rights, watersheds, water supply, habitability, land use, wetlands.

Burkardt, Nina. 1990. **Opportunities to Protect Instream Flows and Wetland Uses of Water in Florida.** U.S. Fish Wildl. Serv., *Biol. Rep.* 90(7). 32 pp.

This publication is one of a series of similar documents that provides a survey of State prerogatives and programs that may be used to protect the instream and wetland uses of water. Most of the opportunities for protecting instream flows are related to fish and wildlife habitat, although many other instream uses are considered, including recreation, navigation, downstream delivery, and waste load assimilation. This document illustrates methods to protect instream and wetland uses within the context of existing laws and regulations.

Key words: Water conservation, water flow, water law, water resources, water rights, watersheds, water supply, habitability, land use, wetlands.

Publications in the "Opportunities" Series

Title	Publication number	Status
Instream Flow Strategies for:		
Arizona	FWS/OBS-78/35	Available[a]
Nevada	FWS/OBS-78/40	Available
New Mexico	FWS/OBS-78/41	Available
North Dakota	FWS/OBS-78/42	Available
South Dakota	FWS/OBS-78/44	Available
Utah	FWS/OBS-78/45	Out of print
Opportunities to Protect Instream Flows in:		
Alaska	FWS/OBS-82/33	Available
Nebraska and Kansas	FWS/OBS-83/02	Available
Minnesota and Iowa	FWS/OBS-83/07	Available
Georgia	FWS/OBS-83/20	Available
Michigan and Wisconsin	FWS/OBS-83/21	Available
Texas, Oklahoma, and Arkansas	FWS/OBS-83/22	Available
Maine	Biol. Rep. 85(9)	Available
Idaho, Oregon, and Washington	Biol. Rep. 85(10)	Available
Vermont and Pennsylvania	Biol. Rep. 86(1)	Available
Massachusetts	Biol. Rep. 86(2)	Available
Montana	Biol. Rep. 86(4)	Available
Opportunities to Protect Instream Flows and Wetland Uses of Water in:		
New Hampshire and Connecticut	Biol. Rep. 87(6)	Available
Colorado and Wyoming	Biol. Rep. 87(10)	Available
South Carolina	Biol. Rep. 88(34)	Available
Kentucky	Biol. Rep. 89(9)	Available
California	Biol. Rep. 89(10)	Available
Nevada		In press
North Carolina		In preparation
Virginia		In preparation

[a] Available from the National Ecology Research Center, U.S. Fish and Wildlife Service, 4512 McMurray Avenue, Fort Collins, Colorado 80525.

NOTE: Mention of trade names or comercial products does not constitute endorsement or recommendation for use by the U.S. Government.

TAKE PRIDE
in America

U.S. DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Departmnet also has a major responsibility for American Indian reservation communities and for people who live in island territories under U. S. administration.